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DESIGN FOR A TOWN CLUB. BY MR. E. MUSMANN, R.A.

ILLUSTRATIONS IN TEXT.

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ARCHITECTURAL EDUCATION AND THE LONDON UNIVERSITY.

THE importance of the education of the young architect cannot be too strongly insisted on, the future welfare of architecture and the status of the architect to so great an extent depending upon knowledge. We make no apologies for returning to the subject from time to time, especially in view of the fact that it is to many members of our profession an alien subject, the real bearing of which they may never have thought out.

It has a twofold bearing on the object of an architect's life-work, which we take to be the production of beautiful and logical building; firstly, because, given the same initial ability, the best work must be produced by the man who has most systematically studied his subject, and, secondly, because, without cultivation we cannot hold our own with men of other callings who have the benefit of that culture which we have ourselves neglected. As a nation and as a profession we are proud of calling ourselves a practical people, often forgetting that the best practical results arise from the successful application of sound theories. In France and America this is better understood than in this country, and the relative superiority of an architect's position in those countries is a direct result of the recognition of the fact that architecture—like all great ennobling and responsible callings—requires knowledge, preparation, and study.

No architect can expect to secure the confidence of a client if the latter ascertains from contact with him that he is devoid of that freemasonry which obtains among educated men. He is likely to be looked upon as a means whereby a certain result may be secured, as a necessary evil to be endured and then thrown aside. It is because their training is in many cases so incomplete that architects' complaints of their clients frequently arise—they are placed at a disadvantage by their ignorance of all but a section of their work.

The great architecture of the past was the outcome of the traditional spirit, in which generations of workers were trained. With the Renaissance came the necessity of study on systematic lines; the great pioneers were men of wide and general learning who were treated by the nobleman and the *savant* as their equals because of their attainments. Even in this country there was a time when the architect was as familiar a figure at Court and at the meetings of the Royal Society as he now is at the Royal Academy and the societies which dabble in his art. It was left to the last century, that of shams and revivals, to degrade the calling of an architect by classing it with occupations which could be learnt by rule-of-thumb methods till George Eliot expresses, through Adam Bede, the characteristic opinion that a "carpenter with a bit of taste could be relied on where an architect failed." And the work of the few giants who have risen above the failures of their times may serve to emphasise to what low straits an art which is not seriously studied can fall.

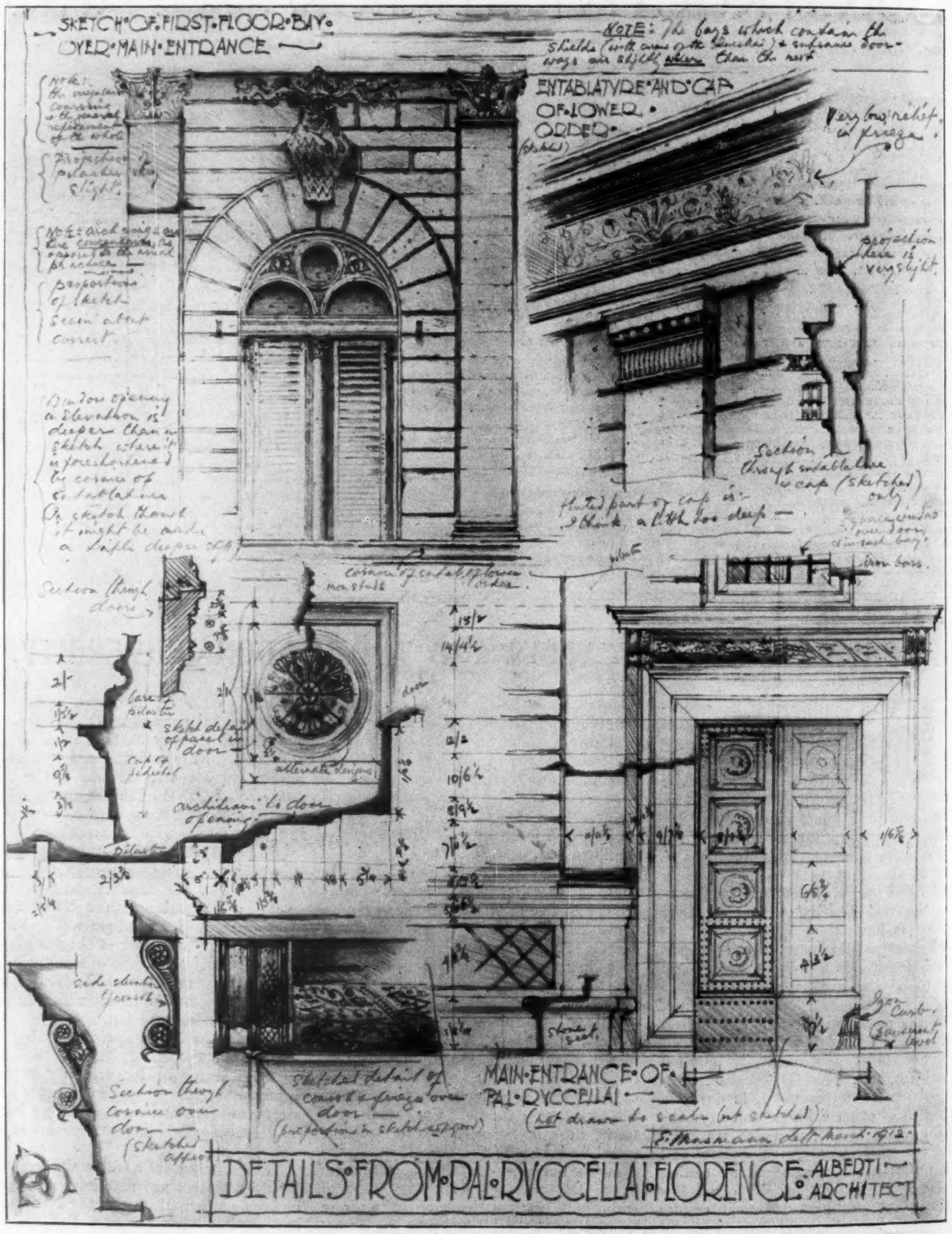
It may be safely predicted, by all manner of reasoning, that if we are to leave a record for posterity in our executed work we must make wide and strong the foundation on which we build by *thoroughly* training those who enter our ranks.

The advantages of a University training for an architect are manifold, and may be briefly summarised. In the first place, it necessitates a good general education, without which the student cannot commence his special studies; it enables

him to get—and from no mean height—a comprehensive idea of what architecture means, a general grasp which is supplemented afterwards by his specialised experience; and, thirdly, it causes him to mix with and hold his own with men destined not only to his own but other professions, and this enlarges his sympathies for and understanding of the great facts of life. Culture has somewhere been defined as the general recollection of what we have forgotten, and the most useful men to a community are not at all necessarily those who are in possession of the greatest number of facts, but those who are trained in the habit of clear thinking.

These, in brief, are some of the advantages offered by the London University courses at King's College and University College, which at present cannot be obtained at any technical school or isolated department devoted solely to the pursuit of architecture.

The first degree in England for architectural students was instituted at Liverpool in 1899, under Professor F. M. Simpson, when a B.A. degree (Honours in Architecture) was given. The University College at Liverpool was at that time one of the constituent colleges of the Victoria University, which also included Manchester and Leeds. Manchester followed, and still retains the B.A. degree course unaltered, but at Liverpool (now an independent University) the course has been changed, and we hope to revert to the schemes followed there and elsewhere in other articles.


SKETCH OF FIRST FLOOR BAY OVER MAIN ENTRANCE
NOTE: The bays which contain the shields (with arms of the families) & entrance doorways are slightly wider than the rest
ENTABLATURE AND CAP OF LOWER ORDER
Very low relief in frieze
projection there is very slight
Section through entablature & cap (sketched only)
fluted part of cap is I think a little too deep
iron bars
Section through door
Section through cornice over door (sketched after)
Sketched detail of cornice & frieze over door
(proportions in sketch exaggerated)
MAIN ENTRANCE OF PAL. RUCCELLAI
(Not drawn to scale but sketched)
E. Musmann del. March 1912
DETAILS FROM PAL. RUCCELLAI FLORENCE. ALBERTI ARCHITECT

Sketches by Mr. E. Musmann, B.A.

(University of London.)

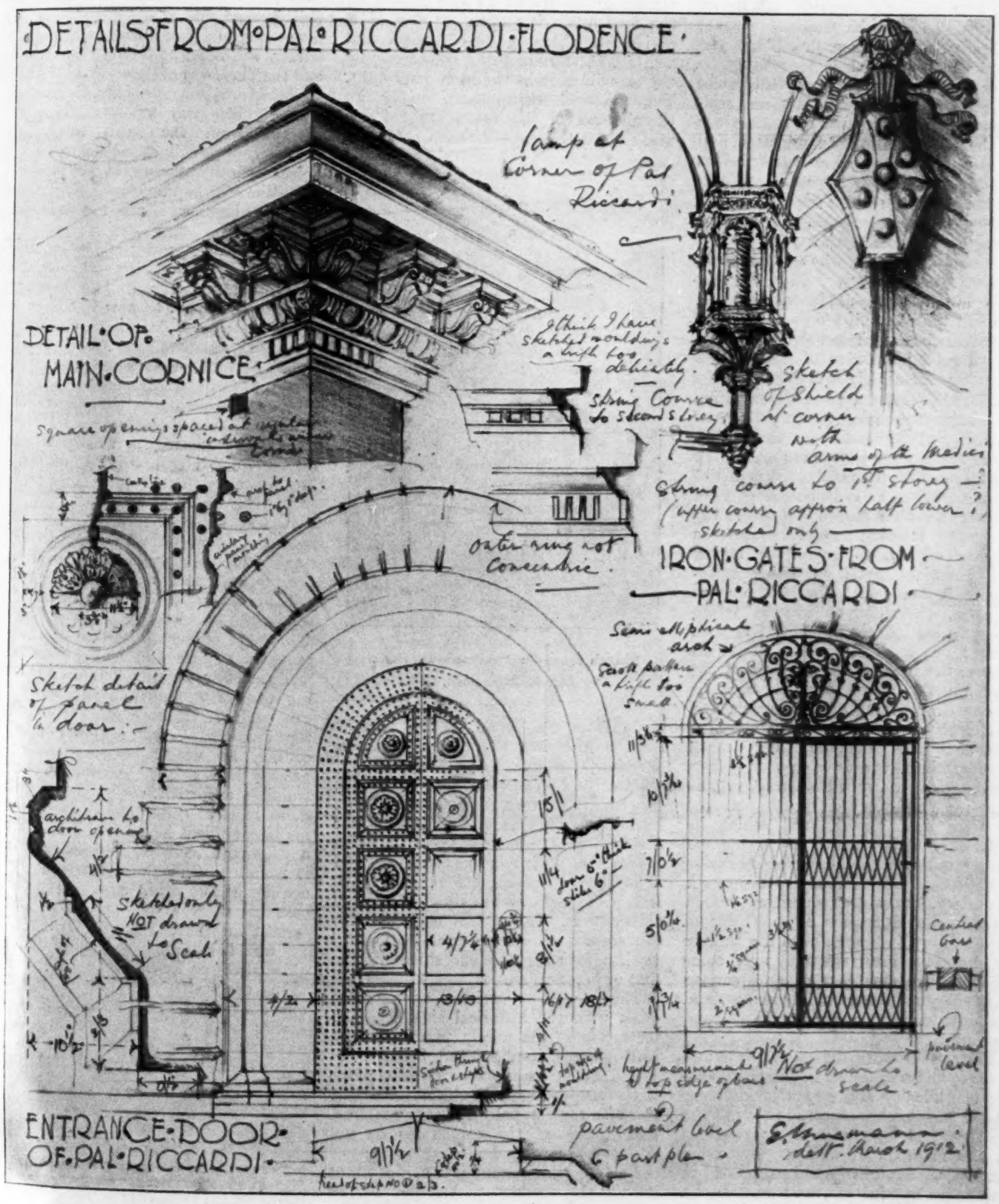
The Degree Course in London was desired many years ago by the late Mr. Arthur Cates, when he was Chairman of the Board of Studies in Architecture of the University, but he died before the scheme was carried through. The regulations of the University made both Greek and Latin *compulsory* subjects for the Intermediate examination, but some five years ago Greek was made optional, and the degree for Architectural students was instituted under the Chairmanship of Sir Aston Webb, R.A.

The course—which is an Honours Course—is a preparation for a B.A. degree. The term "Honours Course" in this case means simply that students take their final examination in one subject only, as distinguished from a Pass Degree in which several subjects must be taken; it is thus a misnomer, as it would seem to indicate the necessity for a superlative degree of excellence instead of a specialised type of training.

The length of the course is three years (officially described as "two years after passing the Intermediate Examination"). Students are required to pass the Matriculation Examination, but are allowed to enter in October and pass the Christmas following. During the first year students are required to attend lectures in four general subjects for the Intermediate examination which follows at the end of the Session.

A recent decision of the Senate enables students to take exercises in the Classic Orders and the History of Greek and Roman Architecture as one general subject, a great advantage to the architectural student, as part of the first year had previously to be spent in an architectural studio without thus helping the preparation for the Intermediate Examination, whereas under the new regulation the general subjects are reduced to three; the reduction was unavoidable, as the students' first year was otherwise too crowded.

As to the preliminary education essential to negotiating the several stages for such a course, a sixth-form boy at any of the public schools would have


DETAILS FROM PAL. RICCARDI. FLORENCE.
DETAIL OF MAIN CORNICE.
Lamp at Corner of Pal Riccardi
I think I have sketched mouldings a little too delicately.
String Course to Second Storey.
Sketch of Shield at corner with arms of the Medici
String course to 1st Storey
(upper course approx half lower)
sketched only
outer ring not Concentric.
IRON GATES FROM PAL. RICCARDI.
Semi elliptical arch
Sketch detail of panel in door:-
Sketched only NOT drawn to Scale
Central Bars
pavement level
Not drawn to scale
ENTRANCE DOOR OF PAL. RICCARDI.
pavement level
E. Musmann. delt. March 1912.

(University of London.)

Sketches by Mr. E. Musmann, B.A.

little or no difficulty in passing both the Matriculation and Intermediate Examinations, but unfortunately comparatively few boys who take up architecture are kept long enough at school to reach the sixth forms. In such cases, the Matriculation Examination may need a little special preparation, with which it should be possible for any average boy to pass, as the standard demanded is a fair all-round test of a good education, and not an unreasonably or unnecessarily high one.

With regard to the special subject from which a student can choose for the Intermediate, a long list is given, but two languages are compulsory, of which one must be Latin or Greek. In the past the four subjects usually taken by students have been Latin, French, Mechanics, and Mathematics, but in the future the three first will probably be taken in conjunction with the Orders and the History of Greek and Roman Architecture, as Mathematics is compulsory for the Matriculation Examination, and the standard demanded in it is sufficient for the wants of an architectural student. Mechanics, on the other hand, is insufficiently taught at schools, and a good degree can be obtained at either Oxford or Cambridge by those who are absolutely ignorant of the subject.

To architectural students, however, who will probably have ferro-cocrete and other constructional problems to deal with, a good knowledge of mechanics is becoming increasingly necessary.

After the Intermediate Examination the students remaining two years concentrate on professional work, and during these years the young architect's training cannot be based on too broad a basis. When he is in actual practice he will be immersed in detail; the University training should be such as will enable him to grasp the logical and historical basis on which architecture is founded. The development of style, the different way in which the principle of the buttress has been worked out in Northern and Southern France, the bearing and relation of the monastic Orders on the development of church planning and the origin and treatment of domical architecture as influenced by climatic and racial considerations, are instances or points which we can study with advantage, and time for which may never be obtained in after life. The interest which he will feel in such a course of training will largely indicate the fitness or otherwise of the avocation he wishes to adopt. A secondary, but still an important, reason why he should acquire a knowledge of such subjects is that in after life he may be brought into contact with some of the many amateurs or antiquarians possessing archæological knowledge, and be able to meet them on a common platform.

The studio work during the last two years includes exercises in design increasing in difficulty and essays on different phases of architectural history. The practical side includes demonstrations in the methods of working and using materials, lectures and exercises in Building Construction, and lectures in the Engineering classrooms and workshops, *specially* arranged with regard to the needs of the architectural students, and consequently ignoring machinery and purely engineering problems. These are supplemented by practical exercises and the strength and elasticity of materials in the Engineering Laboratories under the staff of that department. Courses on Sanitary Science are also given in the department of hygiene.

These courses obviously bring architectural students into direct contact with those who are taking up other professions. The advantages and broadening influence on both sides are no small factors in the acquisition of that liberal education which a University can alone confer.

There is some misunderstanding among architects as to the nature of the final qualifying examination. It is divided into two parts—practical and written, the former being considered by the examiners to be the more important. The practical examination—really an examination of the use a student has made of his training—includes selections made from the work of the student for the first two years—constructional exercises, antique and life drawings, architectural exercises and designs, measured drawings, and also a design made from a subject set by the professor and external examiner. As a student he makes the sketch design unaided, and it is then initialled and retained, and he is given eight weeks to work it out and elaborate it. No student can enter for the second or written examination till he has satisfied the examiners in the first or practical section.

Sketch from Pont Alexandre, Paris.
By Mr. E. Musmann, B.A.

The second or written examination deals with the historical side of architecture, and the purely practical, such as Engineering and Sanitary Science. It would be in many cases an advantage if the student had the option of taking this *after* the first part of the examination, but at present the regulations do not admit of this being done.

Passing this examination does not entitle the student to call himself an architect, but merely to put B.A. after his name in the same way that a student passing the engineering tripos at Cambridge has a similar right. It will, however, become more and more in the future a sign that a man has had what is almost a necessary grounding in the broad principles which must be thoroughly understood and mastered by those who aspire to do the best work.

We feel that it is particularly opportune that we should give these particulars of the London University course, for new buildings devoted to this important work are now being erected adjoining the Slade School in the grounds of University College, and the new studios for Modelling, Painting, Drawing, and Architecture will practically be under one roof on the completion of the scheme next year. The Engineering Laboratories are on the opposite side of the quadrangle, and here special classes for architectural students in Steel and Iron Construction and the Elasticity of Materials will be held, while lectures in Archæology, Egyptology, and Hygiene will be given in rooms entered from the same quadrangle. In the new buildings, which will afford accommodation for about 120 students, provision will be made for a department of Town Planning and other contemplated developments.

A course on Academic Design, under Dr. J. J. Burnet, has already been inaugurated, and will be thoroughly constituted when the new buildings are completed; and the foundation of Travelling Studentships is in contemplation. In order that some idea of the work already accomplished may be obtained, in connexion with this account of the teaching of the London University we are reproducing in this issue some of the designs and sketches of Mr. E. Musmann, the first B.A. in Architecture of the University of London.

It will be seen from the foregoing that the organisation for imparting a sound architectural education has already been formed, and we hope will be taken full advantage of by those wishing to enter the profession. A very great advantage of such a course is that it provides a wide and liberal education, while at the same time it forms a searching test of a student's suitability for the calling. If after going through it the student elected to enter another calling, he would be the gainer by having had a very thorough general training and a University degree, while if, as in most cases, it had brought out his latent talent he would have obtained a thorough general knowledge which it would be difficult in this country to acquire in any other way. So in either case his time would have been better spent than when, as under the old *régime*, he would have entered an architect's office direct on leaving school.

In conclusion we might reiterate our conviction that in nothing is the saying "a little learning is a dangerous thing" truer than in its application to the art and practice of architecture.

NOTTINGHAM CITY ARCHITECT.

The agenda for the meeting of the Nottingham City Council on Monday contained an intimation of the resignation of Mr. F. B. Lewis, the City Architect. The resignation, it is stated, is brought about by reasons of health.

BRIDGES.

IN a well-written article in its issue of September 4 the *Morning Post* calls attention to the need for better-designed bridges across the Thames. The engineer can successfully deal with subways like that to be opened within a few weeks at Woolwich, but it needs the co-operation of the best architectural skill to secure a fine bridge, and, unfortunately, since Waterloo Bridge (which was built immediately after the battle), all our bridges have been failures in design. With the exception of Waterloo Bridge, there is scarcely a bridge of architectural merit within the confines of London.

And yet few problems admit of greater architectural expression, whether the material be stone or iron. No petty question of accommodation here fetters the designer, the necessary elements are simple—a roadway from bank to bank, supported by girders or arches resting on abutments of satisfactory design, its beauty is enhanced by running water catching every gleam of light at a thousand angles, with craft of all description constantly moving on the waters to add human and pictorial interest to its setting. Nor can a bridge be ever built in or have its beauty destroyed by inharmonious surroundings. It may rise from squalor on either bank, but it crosses the waters between them, eternal in their beauty and interest.

The great Renaissance builders seized their opportunities, and in Italy and elsewhere showed their skill and mastery of design.

Under the *régime* of Bernabò Visconti, in the latter years of the XIVth century, a bridge was built across the Addo in a single span, 251 ft. wide, while under Gian Galeazzo Visconti the Ticino was bridged at Pavia in the same century by a bridge composed of seven arches, each 70 ft. span and 64 ft. in height, with a roof over the roadway supported on 100 granite columns.

The fine bridge built by the Scaglieri at Verona, and many others, will occur to us, as well as the quaint and picturesque image of old London Bridge, lined with houses on either side, with a chapel dedicated to S. Thomas à Becket in the centre. In modern Paris we have an example of what an iron bridge may become under skilful hands in the Pont Alexandre II., while in this country it would be difficult to point to a single fine modern bridge except such a purely engineering marvel as that spanning the Forth.

There seems no adequate reason why with a new bridge across the Thames we should not have the convenience of covered footways, with their possibilities of architectural expression, and it will be a thousand pities if in St. Paul's Bridge we do not obtain a design of architectural merit.

In abandoning such a field to the engineer the architect loses one of the greatest chances he can ever have of proving that his profession has the power to create the "thing of beauty" which is a "joy for ever," and shows that he is unworthy to carry on the great traditions of the past.

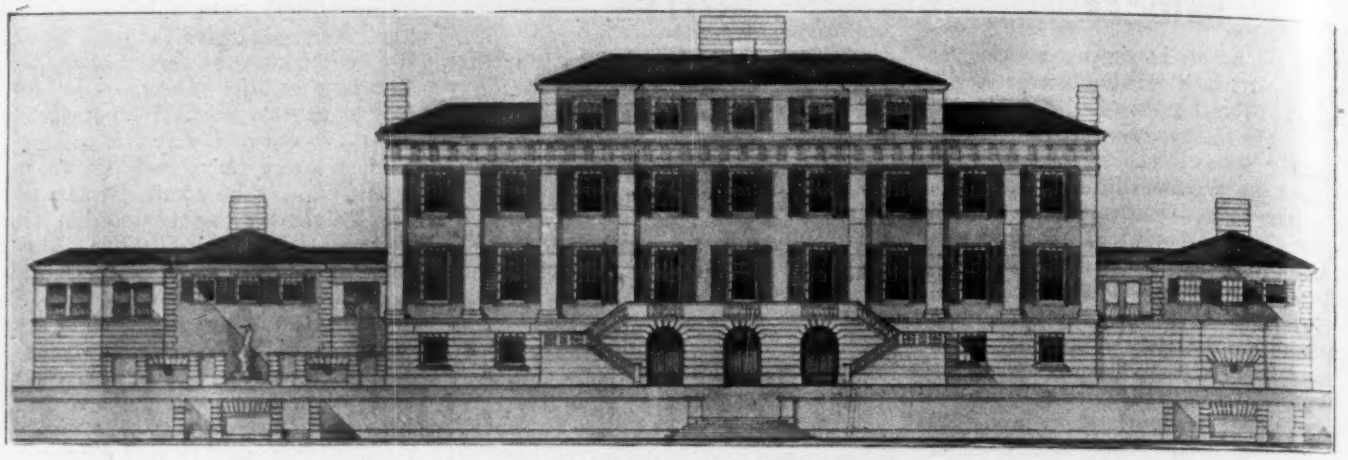
NOTES.

St. George's Hall, Liverpool. WE are glad to hear that the Liverpool Architectural Society have decided to call a public meeting to organise opposition to the Corporation scheme to take down the podium of St. George's Hall for the purpose of constructing flights of steps and placing on the site a memorial statue of King Edward. We have already expressed our hearty agreement with the opinion that the alterations will injure the appearance of St. George's Hall, and we hope that in spite of the vote of the Council in favour of the scheme it is not too late to prevent the proposed work being carried out. It is stated that the opposition is being organised with a view to engaging counsel to represent the objectors at the forthcoming Local Government Board inquiry into the matter.

Architecture and Kingsway. THE history of the development of the Strand to Holborn improvement, particularly with regard to its architectural character, is so clear an instance of the futility of our present methods in dealing with such works that we welcome any attempt on the part of the daily Press to call attention, as the *Standard* does on the 28th ult., to what should be a cause of regret, not only to architects, but to all who have any interest in London beyond the most selfish individualism or utilitarianism. Here was an opportunity such as seldom occurs, which, rightly seized, might have given us a first-class business street, worthy of English art and skill at the beginning of the XXth century, and an object-lesson in the practical advantage and value of an ordered architectural arrangement and amenity. The Council were at the outset alive to this when, twelve years ago, their Improvements Committee recommended that measures should be taken to secure an harmonious treatment of the buildings in Aldwych and Kingsway. But from various reasons these first steps led nowhere. These reasons may be summed up broadly as the want of sufficiently comprehensive powers for dealing with all sides of the problem, and the lack of the incentive and support afforded by well-informed public opinion. The Press can render good service with regard to arousing and educating this opinion, and when that is done the powers would not long be wanting. From the clearance of the Great Fire, and the failure to adopt Wren's plan for the rebuilding, until this present failure consistently to complete a fine improvement, London has been too much a city of lost opportunities. It is well to be reminded sometimes that she is still a city of splendid possibilities; that, though the old opportunities are beyond recall, new ones are constantly recurring, for London is being rebuilded every day.

Advantages of Architecture. SO CAREFUL and jealous are we, as a people, of any encroachment upon individual rights and interests that we are apt to forget that an unregulated individualism tends always to defeat even its own ends. We pride ourselves upon being very practical, and yet are led by a very proper regard for sound balance-sheets into valuing cash more than things that give the cash its value. We even ignore the fact that the architectural amenities of our streets are not only of direct practical effect for good, but may even be a very real commercial asset, whether they consist in the more formal and regular treatment as a whole, which a short, straight street like Kingsway and a crescent like Aldwych demand, or the more picturesque and irregular grouping and composition appropriate to many of the older streets. We have to break down the prevalent fallacy that art is an expensive luxury that does not pay, and we have to reinstate architecture in its true dignity as the great generalising and ordering art, whose true beauty is the final expression of perfected fitness, an efficiency to definite practical ends, both material and spiritual. The causes that make of one street and not of another a good business or shopping centre are in some cases clear enough. In others they are difficult to trace. Sometimes it is nothing more rational or secure than all-powerful fashion. We could not, for instance, calculate or design the causes that have made Bond-street one of the foremost shopping streets in the metropolis; yet we may very safely conclude that its greater neighbour—so much under discussion of late on account of imminent rebuilding—owes much of its popularity to its architectural amenities in being fairly spacious and its buildings designed in a style at least quietly refined and pleasing, and, until quite recent years, harmonious from end to end. We do not suggest that architectural order and beauty should clothe our streets for merely commercial ends, but only that such ends, which we do not pretend to despise, are as likely as those less material to be advantaged thereby.

The New Guildhall Art Gallery. THE Guildhall Improvement scheme, which involves, among other things, new and spacious galleries for its collection of pictures, has at last materialised; a practicable and interesting solution has been adopted by the City Lands Committee, and it will no doubt receive the approval and sanction of the Common Council. We hope to be able to give in our next issue some illustrations of the plan and elevation which Mr. Sydney Perks, the City Surveyor, has designed; meanwhile it is interesting to note that some critics have suggested that he should have followed the main lines of Dance's "Gothic" façade for the Guildhall. We have ventured to emphasise the term Gothic in regard to its application in connexion with Dance's design, because it has been used in the same connexion by those who would wish to see the two sides of the approximately quadrangular site in question designed in the terms which Dance adopted. But we wonder if these critics have ever looked at the Guildhall front! It is one of the most unique bits of design that has ever been mistaken for Gothic. It is, in fact, composed of elements of a most curiously eclectic character, in which the essential features of Gothic art play the smallest part. The Guildhall front is picturesque; it has an air of civic dignity and antiquity; it is moreover the creation of one



Design for a Country House. By Mr. Charles Voysey, jun.

(University of London.)

of the greatest architects (we have only to recall his masterpiece, the Old Bailey, removed a few years ago) which the XVIIIth century produced. But his façade is not Gothic, any more than it is classic, or Renaissance, or Moresque, although it contains, after a fashion, suggestions of these various manners in architecture. In Dance's time next to nothing was known of Gothic art. The style was not appreciated, and it was still less understood. He was, as one says, "called in" to design the façade of a mediæval building, and he did his best according to his lights and the culture of the time, achieving a result which answered its purpose with a certain dignity and a certain charm, and which remains a testimony of artistic skill applied in an unaccustomed direction. But no modern architect with any knowledge of his art would attempt to place in juxtaposition with the Guildhall façade a building designed on Gothic lines. The scheme adopted by the City Lands Committee frankly departs from Dance's design; it supplies the quieter elements of a quadrangle leading up to the main feature, to the central building, which provides entrance and accommodation for the greatest civic authority which the world has known.

The Architectural Association Curriculum.

THE Architectural Association issue a pamphlet giving particulars of their curriculum for the School of Architecture which has been approved by the Board of Architectural Education, and is based on the principle that an architectural student should have a preliminary school training before entering an office. The course suggested is one occupying three years at the Architectural Association Day School. The curriculum is framed with a view to students entering the Academy Schools for final training in design, proficient students being admitted at the discretion of the Royal Academy visitors directly into the Upper School. Special classes and lectures are also arranged for advanced students who are preparing for the Final Examination of the R.I.B.A. The course can be extended to a fourth year, in which lectures and classes dealing with professional practice are held, including the London Building Act, dilapidations, light and air, specifications, estimates, contracts and agreements. The first year's course includes studio work in freehand drawing, perspective, and the use of instruments and scales, the elements of the styles, and elementary construction, etc., the accompanying lectures on the history of architecture, construction, physics and geometry; that of the second year is mainly given up to working out simple problems in design, with visits to museums and historic buildings, sketching and measuring, and students must attend such lectures as the master advises. In the third year design studies will be under the direct supervision of Mr. Robert Atkinson. The third year's course is intended to carry the students' training in design and draughtsmanship to a stage considerably in advance of that required for the R.I.B.A. examination. The fees for the above courses are moderate, and we have no doubt that the Association's work will, as heretofore, be of the greatest use to those entering the profession.

DESIGN FOR A COUNTRY HOUSE.

THIS house is designed on XVIIIth-century lines, the main reception-rooms being on the first floor. In the centre of the ground floor are an entrance vestibule and garden-room or loggia. The offices, kitchen, etc., are placed on the east wing, while billiard-rooms, lavatories, and strong-room are on the west, with communication to the gymnasium or ballroom and the fountain court. The entire south front is taken up by the reception-rooms, which communicate with each other. The north front is the library with access to the loggia on the high level. The bedrooms are arranged in suites on the second and third floors. As to the material, the orders are of stone and the infilling of Italian stucco, with the object of emphasising the architectural features. This design, by Mr. Charles Voysey, jun., was executed at University College.

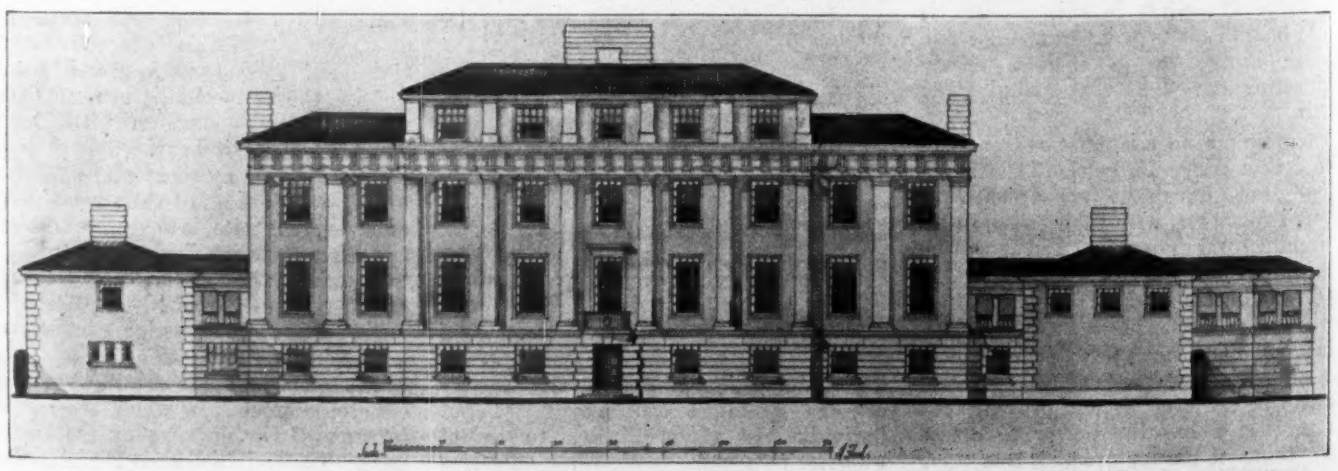
GENERAL NEWS.

Professional Announcement.

Having been appointed to the Professorship of Architecture at Manchester University, Mr. Archibald C. Dickie has arranged a partnership with Mr. J. Buyers Scott, who has formerly carried on the practice at 23, Old Buildings, Lincoln's Inn, W.C. Both practices will be amalgamated and will in future be conducted under the title of Dickie & Scott, at the above address, and at the University, Manchester.

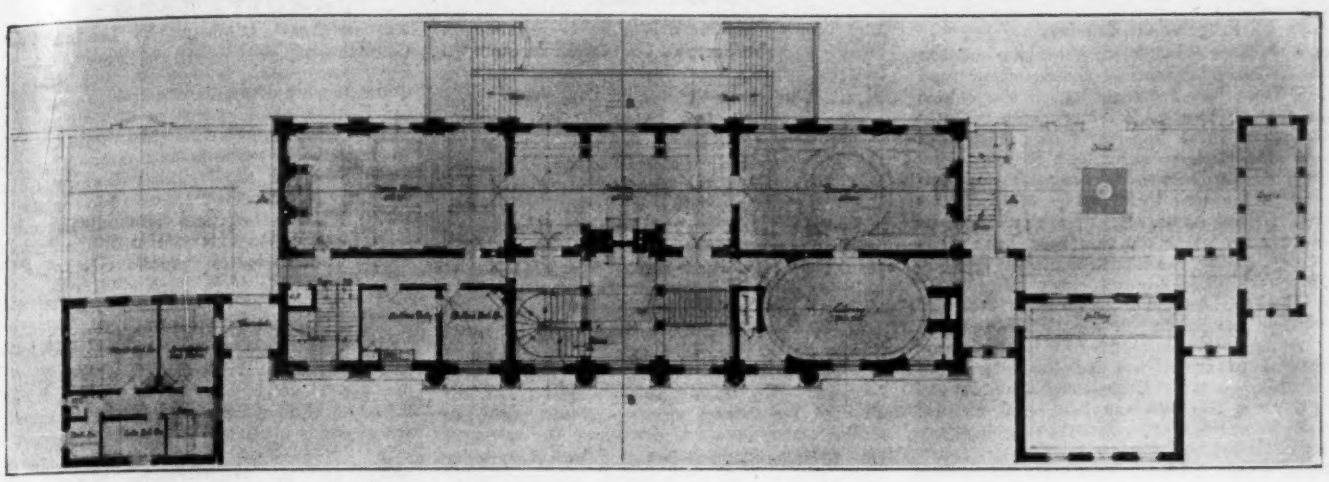
The Ghent Exhibition, 1913.

For the International Exhibition of next year the authorities will erect a Palais de l'Horticulture et des Fêtes, which will be one-



Design for a Country House: Entrance Front. By Mr. Charles Voysey, jun.

(University of London.)



Design for a Country House. By Mr. Charles Voysey, jun.

(University of London.)

third larger than the Crystal Palace. Special pavilions will be built by France and Germany. The principal British exhibits will consist largely of machinery, tools, and pottery.

Holborn Viaduct.

The City Engineer (Mr. Frank Sumner) has begun another detailed examination of the bridge and its supports, which will be continued from day to day until it is completed. His report will be placed before the next meeting of the Streets Committee, which will be held in about two weeks' time. The City Engineer, it is stated, is unaware of any fresh development or extension of the cracks which were first observed forty-four years ago, but should there be any necessity for strengthening the supports remedial steps will be taken at once.

St. George's Hall, Liverpool.

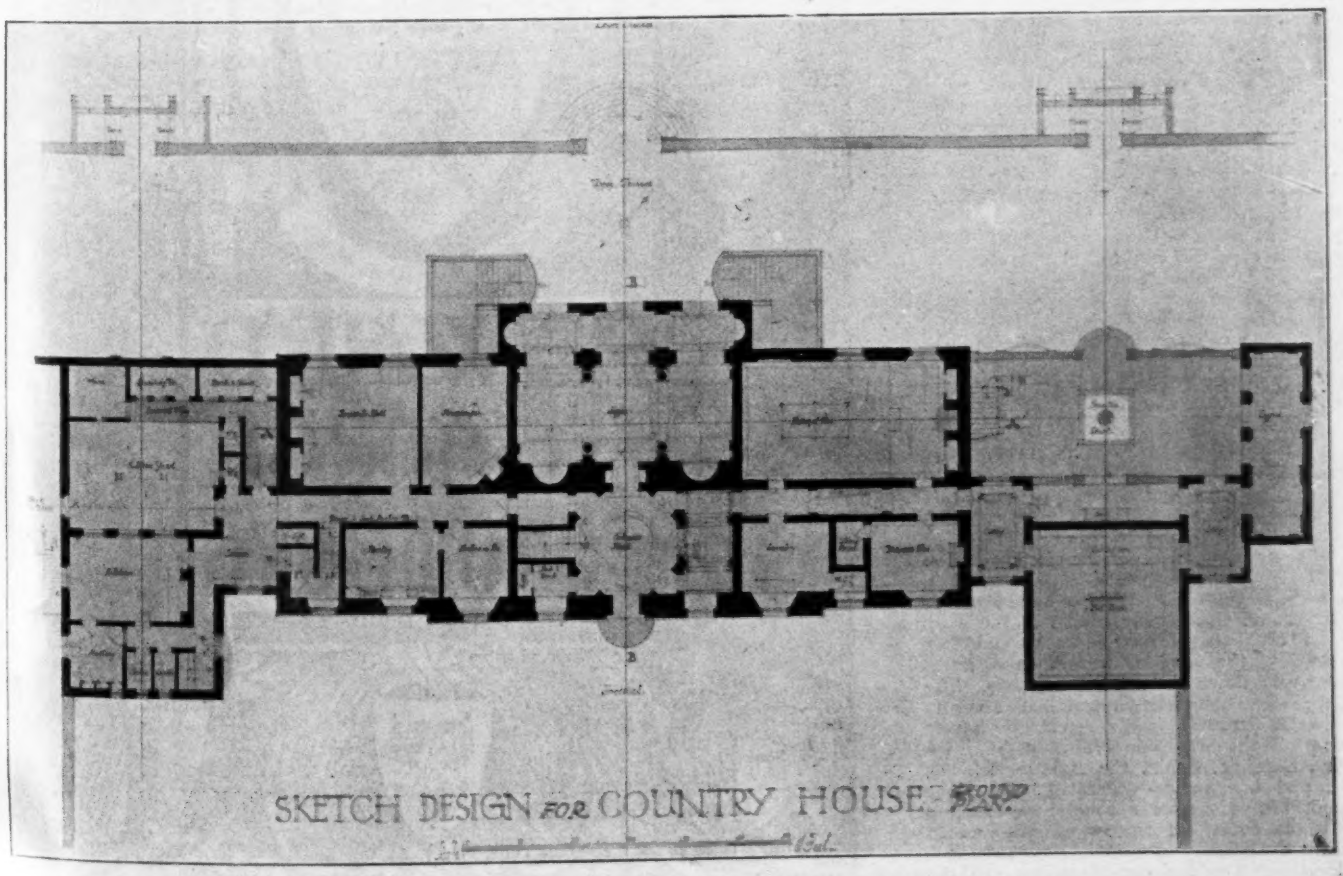
Mr. Hastwell Grayson, President, Liverpool Architectural Society, has sent a letter to the Liverpool Press, in the course of which he says: The suggestion that a model should be prepared on the basis of Elmes' sketch, showing great pedestals at each end of the podium, surmounted by equestrian statues, was made because of the futility of opposing the official scheme without an alternative. The sketch is one of many that have been preserved. Obviously from the very commencement the extreme difficulty of a satisfactory finish to the hall from St. John's-lane was realised. The podium was an inspiration which came after much scholarly and careful thought. It is pure art, but because it is not a hotchpotch of art and utilitarianism the public are prone to lose sight of the art. It requires imagination to see that an entrance must be judged by the multitude of those who pass by as well as by the few who enter, and that to form a new approach does not necessarily add dignity. A great building requires a great base. The more majestic the building the greater is the need for massive simplicity in the base.

School of Art Wood-Carving.

The School of Art Wood-Carving, Thurloe-place, South Kensington, has been reopened after the usual summer vacation, and we are asked to state that some of the free studentships in the evening classes maintained by means of funds granted to the school by the London County Council are vacant. Forms of application for the free studentships and any further particulars relating to the school may be obtained from the manager.

Town Planning.

At the meeting of the British Association in Dundee Professor Geddes, University College, Dundee, spoke on the needed co-operation of the sciences towards the town-planning movement. He said that a survey was necessary before the preparation of any town-planning scheme could be satisfactorily undertaken. It was to be feared that schemes were in incubation which, whatever their particular merits, were not based upon any sufficient surveys of the past development and present condition of the towns or upon adequate knowledge of good and bad town planning elsewhere. In such cases the natural order, that of town survey before town planning, was being reversed, and in this way individuals and public bodies were in danger of committing themselves to plans which would have been widely different with fuller knowledge, yet which, once they were produced, it would be too late to replace and even difficult to modify. Therefore before preceeding to the preparation of a town-planning scheme it was desirable to institute a preliminary local survey which should take into account the situation, historic development, communication, industry, and commerce, population, and town conditions and requirements.



Design for a Country House. By Mr. Charles Voysey, jun.

(University of London.)

Progress in Housing.

At a recent meeting at Wrexham of the Welsh Housing Association, the Secretary read a letter from Mr. John Burns, in the course of which the writer said: "The return recently issued as to rural housing shows that rural district councils have submitted to me during the past nineteen months housing schemes costing over a hundred thousand pounds, and, as regards urban areas, I observe that loans amounting to close on this sum have been sanctioned during the month ending August 16 last."

Mr. Herbert Lewis, M.P., said that for fifteen years after the passing of the Housing Act of 1890 loans amounting to only 10,300*l.* were sanctioned to authorities for the housing of the working-classes. During the next six and a half years 95,000*l.* was lent, and of that amount about 60,000*l.* related to applications made to the Local Government Board since the beginning of 1911. If to this was added the amount of applications received during 1912 and now under consideration, they got over 100,000*l.* as repesenting the estimated cost of housing schemes put forward during the last nineteen months. That was twice the amount of the loans sanctioned in the preceding twenty years. With this increased activity in rural housing there had been no falling off in urban schemes. A White Paper just issued by the Board showed that the loans sanctioned for housing schemes undertaken by urban district councils from January, 1910, to the end of October, 1911, amounted to 200,000*l.* Between that date and August 15 last 326,000*l.* had been sanctioned, and of this amount nearly one-third was sanctioned in the last month. The bringing of housing schemes into existence was a matter of great difficulty, but considerable progress was being made. Two schemes had been finally made by local authorities. Authority had been given to thirteen local authorities to prepare or adopt eighteen schemes, and nine applications for authority to prepare schemes were at present before the Board, and there were ten cases in which preliminary notices had been given by local authorities. In all 126 schemes were either well on the way towards completion or in contemplation.

The Selby Abbey Restoration.

The restoration of Selby Abbey Church, together with the rebuilding, through Mr. William Liversidge's munificence, of the south transept, which has been missing for two centuries, has necessitated revision of Mr. W. Herbert Scott's illustrated handbook, "The Story of Selby Abbey: From Rise to Restoration," and a new and enlarged edition—to be known as the William Liversidge Transept Edition—is being published by Mr. Rimmington (Selby) and Mr. David Nutt (London).

The Bristol Society of Architects.

The fourth Saturday afternoon tour of this Society was made to Bath, the members being conducted over the city by Mr. Mowbray A. Green, and a number of buildings were visited. After tea most of the party took the tram to Combe Down, walking down to Prior Park, John Wood's chief work, and thence through the grounds to the Palladian Bridge, and returning to the city by way of Old Widcombe Manor House, the reputed work of Thomas Greenway.

Prehistoric Monuments in Malta.

In the course of the proceedings of the Dundee meeting of the British Association Dr. Thomas Ashby, according to the *Times*, said the British School at Rome had had the advantage during three seasons of co-operation with the Government of Malta in the excavation of several megalithic monuments on the islands of Malta and Gozo. The results of the work showed that these monuments undoubtedly belonged to the neolithic period, or at latest to the very dawn of the age of metals. The pottery was characteristic, and had affinities with wares discovered in Western Mediterranean lands where the megalithic civilisation flourished (Sicily, Sardinia, Spain, the Balearic Islands, etc.), and in remains connected with it or related to it. Not a trace of metal was found in the whole course of these explorations. In Sardinia the School had confined itself to surface exploration. Dr. Duncan Mackenzie, in the course of three campaigns, had discovered a number of dolmens, some of which formed the transition to the "tombs of the giants"—long tombs used for a number of inhumation burials like the barrows and cairns of our own islands.

Classes in Reinforced Concrete.

Classes for the instruction of engineers and architects in reinforced concrete, to be held at the Northern Polytechnic Institute, Holloway-road, N., start on the 20th inst. for the Session 1912-13. On the 27th inst. Mr. de Vesian, M.Inst.C.E. (Chief of the Hennebique Company), is to give an illustrated lecture, open to the public, on large works recently carried out.

St. Sophia, Constantinople.

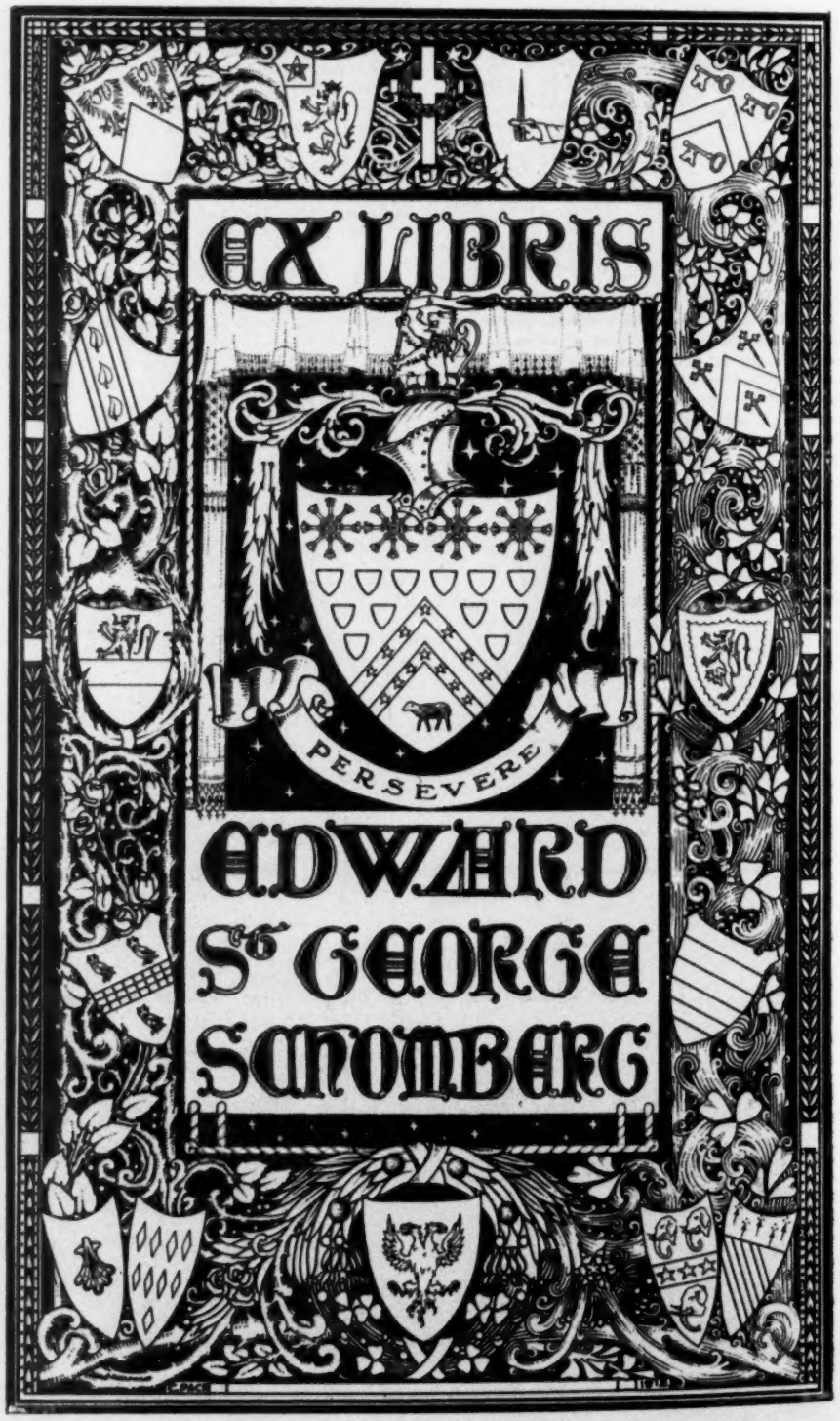
It is reported that the glass and cement bands placed over cracks in the mosque of St. Sophia have broken. The tests were begun by Mr. T. G. Jackson, R.A., and Sir Francis Fox about two years ago, and the recent earthquake has developed the cause of the trouble. Unless the building is speedily strengthened collapse is feared.

White Hart Lane Estate.

The Local Government Board in giving its consent to the sale of 49½ acres of this estate at Tottenham suggested that it might be suitable for preservation as an open space provided the local authorities would undertake to share the cost. This suggestion was discussed between the London County Council and the Urban District Councils of Tottenham and Edmonton, but the local Councils were of opinion that there was no need for further open spaces in this district, and that it was unlikely that they would be willing to contribute towards the cost. The Parks Committee of the London County Council recommend, therefore, that no further steps be taken in the matter, and the land will probably be transferred to the control of the Improvements Committee for disposal as surplus land.

ARMORIAL BOOK-PLATE.

THIS armorial book-plate has been designed on genealogical lines. The central feature is the heraldic achievement of the owner, whilst the shield immediately below bears his maternal arms. Ranged up on each side in pedigree order are the coats-of-arms brought in by marriage. Those on the right belong to the paternal ancestors, and the shields are placed on a field treated with rose ornament to indicate their English origin. On the left side are the shields of the maternal ancestors who are Irish; the border has therefore been treated with the shamrock. The design is by Mr. Charles L. Pace.



Armorial Book-Plate. Designed by Mr. C. L. Pace.

ILLUSTRATIONS

Port of London Offices.

WITH the reproductions of Mr. Atkinson's design we complete our illustrations of the six schemes sent in for final selection in the competition for the new Head Offices of the Port of London Authority. In the article in our issue of July 19 we said: "Mr. Robert Atkinson submits a scheme having for its main idea an octagonal hall, round which the chief departments are planned, which is entered from Trinity-square and from two entrances in rear, which are diagonally placed. Like everything Mr. Atkinson does, the design is characterised by great care and refinement, but we do not feel that it represents him at his best, the design of the colonnade across the main entrance being especially unhappy."

Mr. Atkinson writes that a genuine effort was made to keep the ground floor as one large hall and to minimise corridors on the upper floors.

Design for a Town Club.

THIS design for a town club by Mr. E. Musmann was submitted as part one of the final examination of the B.A. degree of the University of London, Honours in Architecture. The conditions as to site, etc., are as follows:—Frontage 100 ft., depth 120 ft., lighting to be secured by means of a central court, side areas, or both. The entrance elevation to face the north and to look on to a main thoroughfare, while that to the south is to overlook a public square. There are adjoining buildings on east and west. Besides the ground and first floor plans, as shown in the illustrations, provision is also made on the second floor for a card-room and top-lighted billiard-room over the smoking-room, while a strangers' smoking-room, a top-lighted library, and a house dining-room face the south. A service-room, lifts, and members' lavatory are also provided on this floor. The third floor consists of bedrooms for members and a terrace over the billiard and card rooms; kitchen, heating arrangements, extra cloak-room, and members' lavatory, etc., are situated in the basement; while a small service mezzanine is provided between the ground and first floors.

MEETINGS.

SATURDAY, SEPTEMBER 14.

Northern Architectural Association.—Meeting in Sunderland.

MONDAY, SEPTEMBER 16.

Royal Sanitary Institute (Lectures for Sanitary Officers).—Dr. Charles Porter on "Sanitary Law: A." 7 p.m.

WEDNESDAY, SEPTEMBER 18.

Royal Sanitary Institute (Lectures for Sanitary Officers).—Dr. Charles Porter on "Sanitary Law: B." 7 p.m.

FRIDAY, SEPTEMBER 20.

Royal Sanitary Institute (Lectures for Sanitary Officers).—Dr. Charles Porter on "Sanitary Law: C." 7 p.m.

COMPETITION NEWS.

A list of current Competitions is printed on page 315.

Royal National Eisteddfod, Wrexham.

As announced last week (p. 283), twenty-nine competitors entered for the premium of 50*l.* offered by the Committee of this festival in conjunction with the Welsh Housing Association. The object of the competition was to obtain designs for workmen's dwellings. The assessors, Mr. T. Taliesin Rees, F.R.I.B.A., and Mr. A. Williams, divided the premium between Mr. W. Eaton, A.R.I.B.A., of Cardiff ("Ivy"), and Messrs. Fair, Myer, & Jones, of London ("Betterment"), whose work was considered to be of equal merit. The names of the other competitors whose work received mention have not been disclosed.

Rangoon Municipal Buildings.

We understand that Messrs. Ogilvy, Gillanders, & Co., agents, Rangoon Municipality, 67, Cornhill, E.C., have been advised by cable from the Rangoon Municipality that the time stated in Clause 14 has been further extended to March 1, 1913. The latest date for posting letters to reach Rangoon by that date will be by the Indian mail closing in London on Friday, February 7, 1913.

School at Dundee.

The President of the Royal Institute of British Architects has nominated Mr. Alexander N. Paterson, of Glasgow, to be the assessor in the competition to be promoted by the Dundee School Board for a school to house physically and mentally defective children.

CORRESPONDENCE.

Architects' and Surveyors' Approved Society.

SIR,—Your readers will be interested to hear that this Society has been approved by the Commissioners, and on their advice applications have come in at a steady rate since the scheme was first put forward, and there is now no doubt that such a Society is wanted.

We append some further information, which it is helpful to give as a result of the large number of letters we have received, and we shall be glad if you will give it publicity in your columns.

Anyone who is in sympathy with the Society, but who does not come under the scope of the Act, may become an honorary member at a subscription of 10s. 6d. per annum or a donation of not less than 2*l.*, and such subscriptions will be devoted to defraying a portion of the necessary administrative expenses and thereby increasing the benefits available to the members.

In this way it is hoped that a community of interest will be established between employers and employees, which is an object everybody will desire to promote.

It is not necessary now that the Society has been approved that the forms of application for ordinary membership should be sent in by September 16, but it is very important that as many applications as possible should be received before October.

Yours faithfully,

F. R. YERBURY (Sec., A.A.).
IAN MACALISTER (Sec., R.I.B.A.).
A. GODDARD (Sec., Surveyors' Institution).
C. MCARTHUR BUTLER (Sec., Society of Architects).

[We take the following from the information referred to:—

"This Society has now been approved and is open to everyone (draughtsmen, clerks, typists, etc.) employed in the offices of architects and surveyors, provided they are between the ages of sixteen and seventy and have not an income of more than 160*l.* per annum.

Pupils who pay a premium and receive a small weekly salary or any payment in return of premium from their employers must be insured. Unpaid pupils need not be insured.

Deposit contributors who do not belong to any approved society can only draw on the money in their account, while members of approved societies receive the following benefits under the Act in return for the same contribution as the deposit contributors:—

Doctor and medicine both free when needed, or a payment instead thereof.

Treatment for consumption.

Sick pay of 10s. per week for twenty-six weeks beginning on the fourth day, and disablement benefit of 5s. per week so long as necessary.

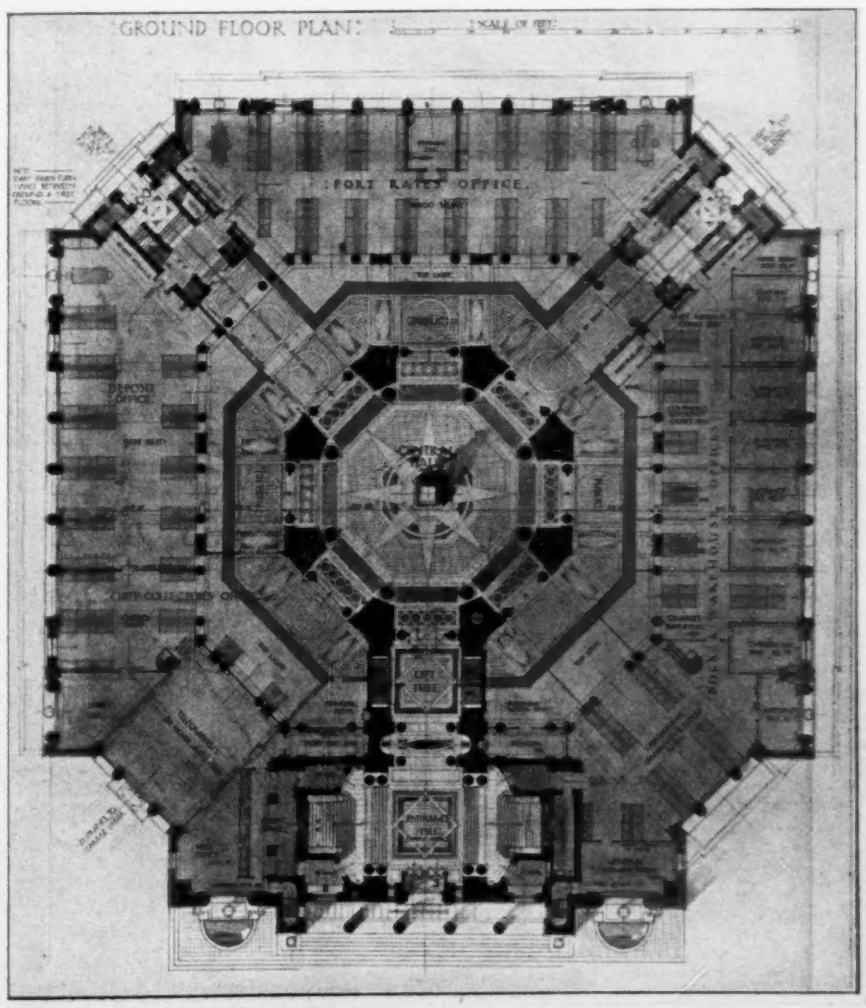
When the funds of the Society permit additional benefits will be offered, and in the case of those employed in offices where the usual pay is given during illness it is hoped to arrange for alternative benefits other than those provided if the members so desire.

Persons whose income rises above the 160*l.* per annum limit cannot continue insuring under the Act unless they have been a member of an approved society for five years under the Act, in which case they can continue as voluntary contributors, but must pay both the employer's and the employee's contributions.

The question of providing additional benefits in return for additional contributions has not yet been decided, but no doubt if sufficient numbers desire it arrangements will be made accordingly.

The Society reserves to itself the right to require a medical certificate in special cases.

There is no entrance fee and the preliminary expenses of circularising will not be borne by the Society, so that it will not be saddled with a heavy initial expenditure.



Port of London Offices: Ground Plan. Competitive Design by Mr. Robert Atkinson, A.R.I.B.A.

It is apparent that a Society entirely confined to professional men and women in safe and healthy employments, with large numbers yearly passing beyond the insurance limit (whose previous contributions may remain in the funds of the Society), should be in a position to offer better benefits than societies of mixed membership.

It is for these reasons that such a society seems desirable in the interest of those employed in architects' and surveyors' offices.

Persons who are already insured in an approved society can before October 15 transfer by giving notice to the Society in writing that they wish to do so. After that date they will have to show a good reason for doing so. Probably the fact of wishing to join a "Professional Society" will be considered a sufficient one.

Those who sign the form already issued signifying their desire to transfer to the "Architects' and Surveyors' Approved Society" will be notified in due course what steps to take."

Hot Water Supply.

SIR,—With your permission I should like to offer a reply to Mr. W. B. Hopkins's letter which appears in your issue of August 30 last.

It is recognised that with what is called the "tank system" of apparatus for domestic hot water supply—the hot storage tank being above the taps, with the tap branches taken from the flow pipe—it is not possible to withdraw all the heated water without having, after about ten gallons has been drawn, some cold water come mixed with it. Notwithstanding this fact, however, the apparatus has done excellent service, and, although seldom erected at the present time, little fault has been found with it as regards the yield of heated water at the taps.

When a tap is opened water comes from every possible direction to issue from the tap, and with a tap on the flow pipe water comes both down from the tank and up from the boiler. Both directions yield the hottest water in the apparatus for a time, but so soon as the contents of the boiler are withdrawn the water which follows from this direction is cool or cold. Previous to the cool water coming up to the open tap there would be about ten to twelve gallons of really hot water drawn, after which the water issuing from the tap would be mixed cold and hot, not wholly cold.

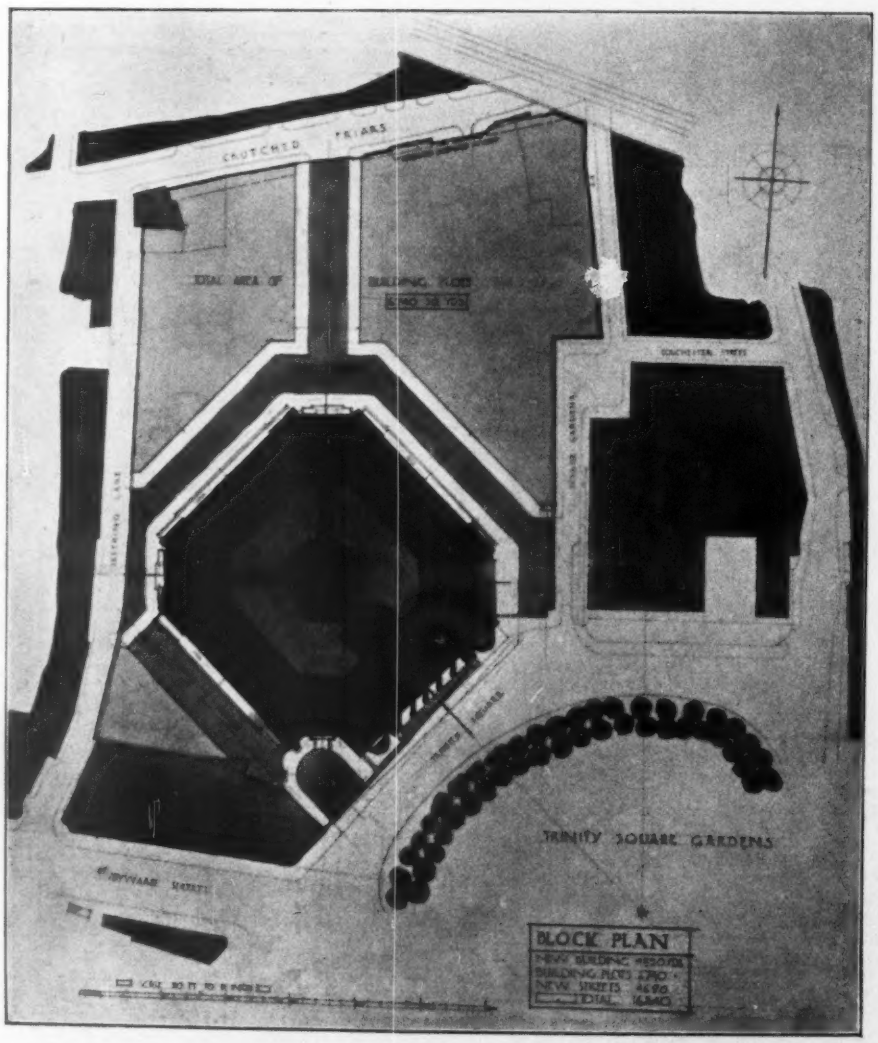
The foregoing is explained to give point to two important facts—firstly, that of really hot water it is seldom that as much as ten gallons is wanted at once, this water being for the sink, tub, pails, jugs, etc., so that the amount of hot water drawn at once seldom if ever admits of cool water coming up through the boiler. Secondly, with bath water, of which a larger bulk is always wanted at once, if ten or twelve gallons of water at 150 deg. is followed by a good quantity of water at 100 deg. (the mixed hot and cool), the result is quite satisfactory, as even then some additional cold water would be needed to make the whole of bathing temperature.

I am not wishing to defend the old tank system, but rather to explain how it has managed to give a nice degree of satisfaction for so long. As stated, it is seldom erected now, the "cylinder system" having superseded it, yet the most modern type of installation, one that is better than any preceding it, is called the "combined cylinder-tank system," having the advantages of both systems and the disadvantages of neither.

It is to be feared that the plan suggested by Mr. Hopkins, while possible on some occasions, cannot be considered practicable for general use. My house in the near London suburbs is not a large one, but, supposing the tank to be situated in the bathroom, it would, of course, be convenient to the bath and bathroom basin, but the dressing-room lavatory basin would be 40 ft. (run of single pipe) distant, the cloakroom basin 35 ft., scullery sink 40 ft., pantry sink 60 ft., and so on. There are houses in Mayfair and Kensington having the tank system of apparatus in which some of the kitchen offices are undoubtedly 150 ft. (run of pipe) distant from the tank. What might meet the case, halfway, so to speak, would be to adopt Mr. Hopkins's suggestion for all bath taps (which are usually upstairs) and have ordinary flow pipe branches for other taps. This, however, is not found to be necessary in ordinary experience.

I am sorry it should be stated that "the advice given must frequently lead to failures," for it is quite incorrect to say so.

FREDK. W. DYE.



Port of London Offices: Block Plan. Competitive Design by Mr. Robert Atkinson, A.R.I.B.A.

INTERCOMMUNICATION COLUMN.

Crumbling Brick Wall.

SIR,—I own a semi-detached house about thirty years old, and within the past two years the bricks of the end wall have shown a tendency to crumble. I should be glad to learn of any method whereby this could be checked by means of a coating or other process.

SUBURBAN.

BOOKS RECEIVED.

STRUCTURAL DESIGN. By H. R. Thayer. (London: Constable & Co. 6s. net.)

THE LIVING WAGE. By Philip Snowden, M.P. (London: Hodder & Stoughton. 1s. net.)

MODERN SANITARY ENGINEERING. By Gilbert Thomson. (London: Constable & Co. 6s. net.)

FIFTY YEARS AGO.

From the *Builder* of September 13, 1862.

Bayswater.

BEYOND all others this suburb has grown and flourished within the last ten years; for a mile and a half westward of Victoria Gate, by nearly a mile in width, extending northward from Kensington Garden-road, a great and aristocratic town has been added to the metropolis. Six district churches, and more than that number of chapels, have been completed, and are thronged. The arrangement of the houses planted upon this new quarter is a vast improvement upon the old plan of construction; for the mode of utilising and adapting space, particularly in the basement story, gives improved light and air, and increases, at the same time, the convenience and healthfulness of each dwelling.

*** It is a pity that this "vast improvement" to the arrangement of the houses did not apply also to the planning of the streets. Compared with George Gulch's design for the adjacent Paddington Estate executed in 1838—illustrated in the February number of our "Monthly Review of Civic Design" (p. 127)—the general lay-out of this district shows a distinct retrogression. With the exception of Lancaster-gate and the planning of a few of the squares, there is little attempt at ordered arrangement to be found between Westbourne-terrace and Ladbroke-grove.—ED.

NATIONAL PORTRAIT GALLERY.

In the fifty-fifth annual report of the Trustees of the National Portrait Gallery, which was recently issued, a demand is made for the extension of the Gallery by the inclusion of the corner plot immediately to the west of the existing building. On April 3, 1909, the report states, the Trustees provisionally accepted from his Majesty's Office of Works the allocation of a plot of ground then occupied by St. George's Barracks. The rapid increase of the collections makes it imperative that the extension of the building on this site should be put in hand at once. Every possible economy of space has now been effected, but the existing building permits no adequate representation of English historical portraits after the end of the XVIIIth century, with the single exception of the room in the east wing devoted to literary celebrities. Expansion can take place in one direction only, namely, to the westward, towards St. Martin's-street, upon the site formerly occupied by St. George's Barracks. The portion of this ground already allotted to the Board is sufficient for the needs of the moment, but the needs of the future require that the land lying to the west of this plot, and in alignment with it and the present building, should be definitely assigned to the National Portrait Gallery.

13, 1912.

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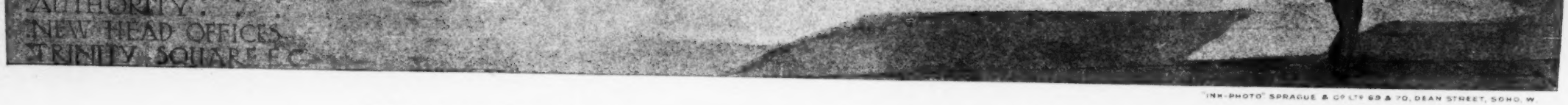
"INK-PHOTO" SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

PORT OF LONDON AUTHORITY. COMPETITIVE DESIGN FOR THE NEW HEAD OFFICES

By Mr. Robert Atkinson, A.R.I.B.A.



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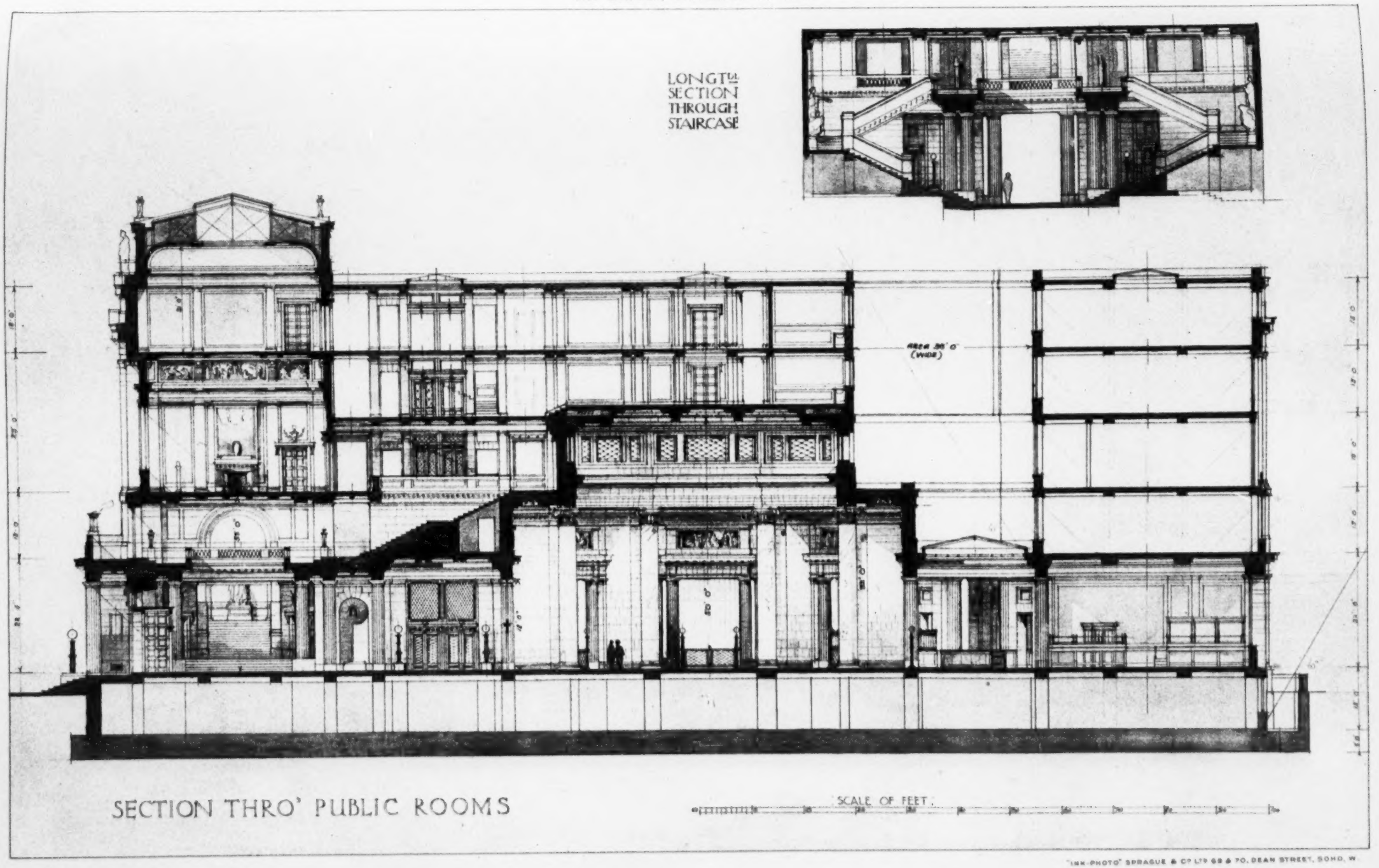

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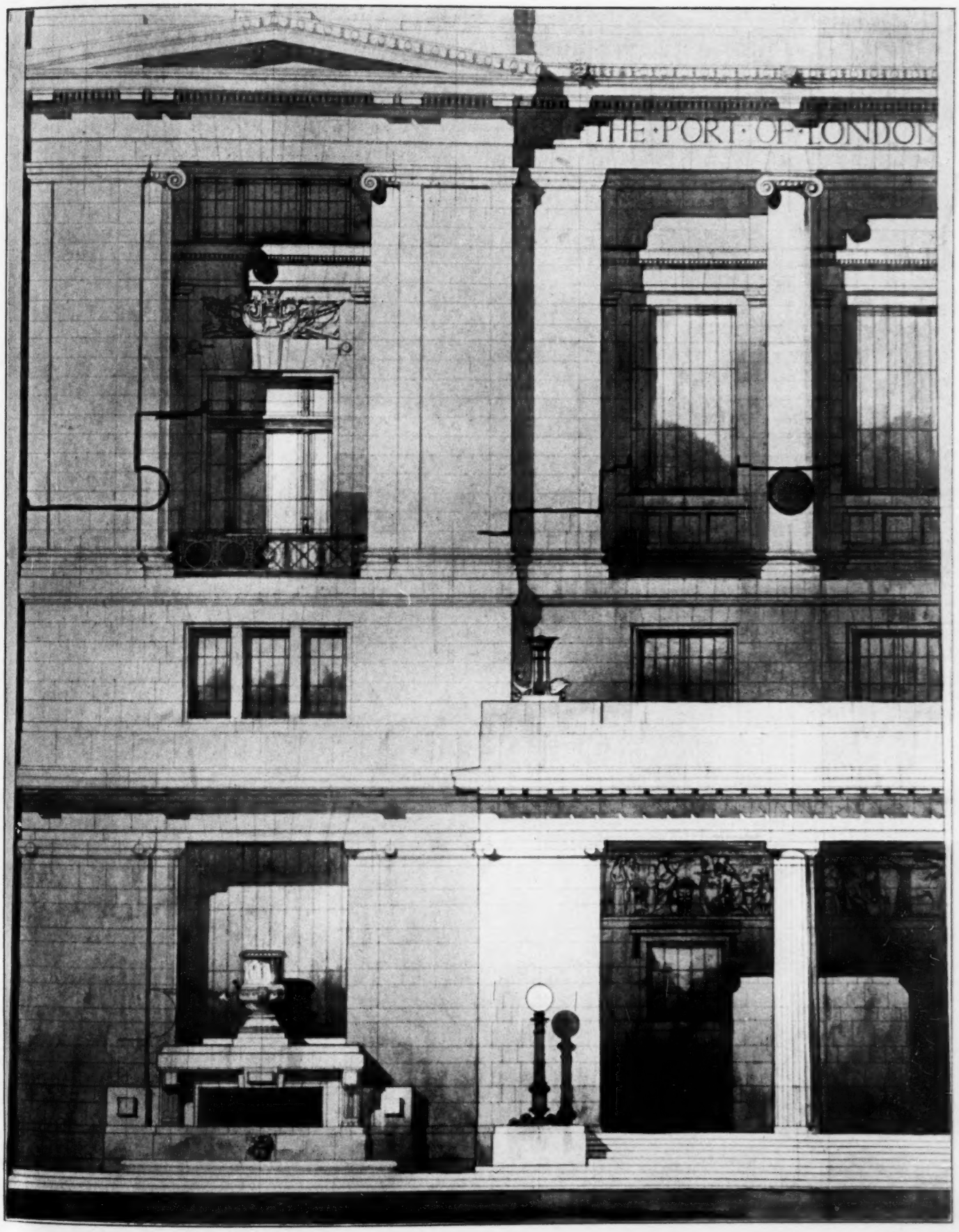
Sprague & Co., Ltd., Printers, 60 & 70, Dean St., London, W.

DESIGN FOR A TOWN CLUB: DETAIL OF ENTRANCE FRONT—By Mr. E. Musmann, B.A.



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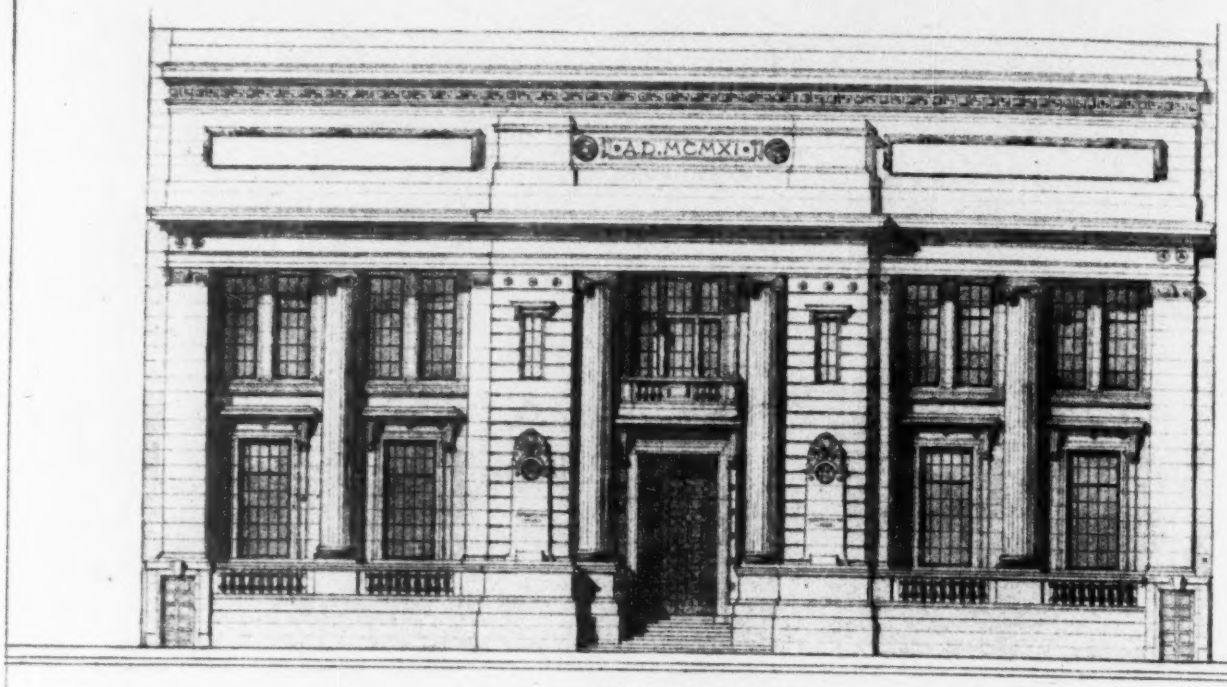
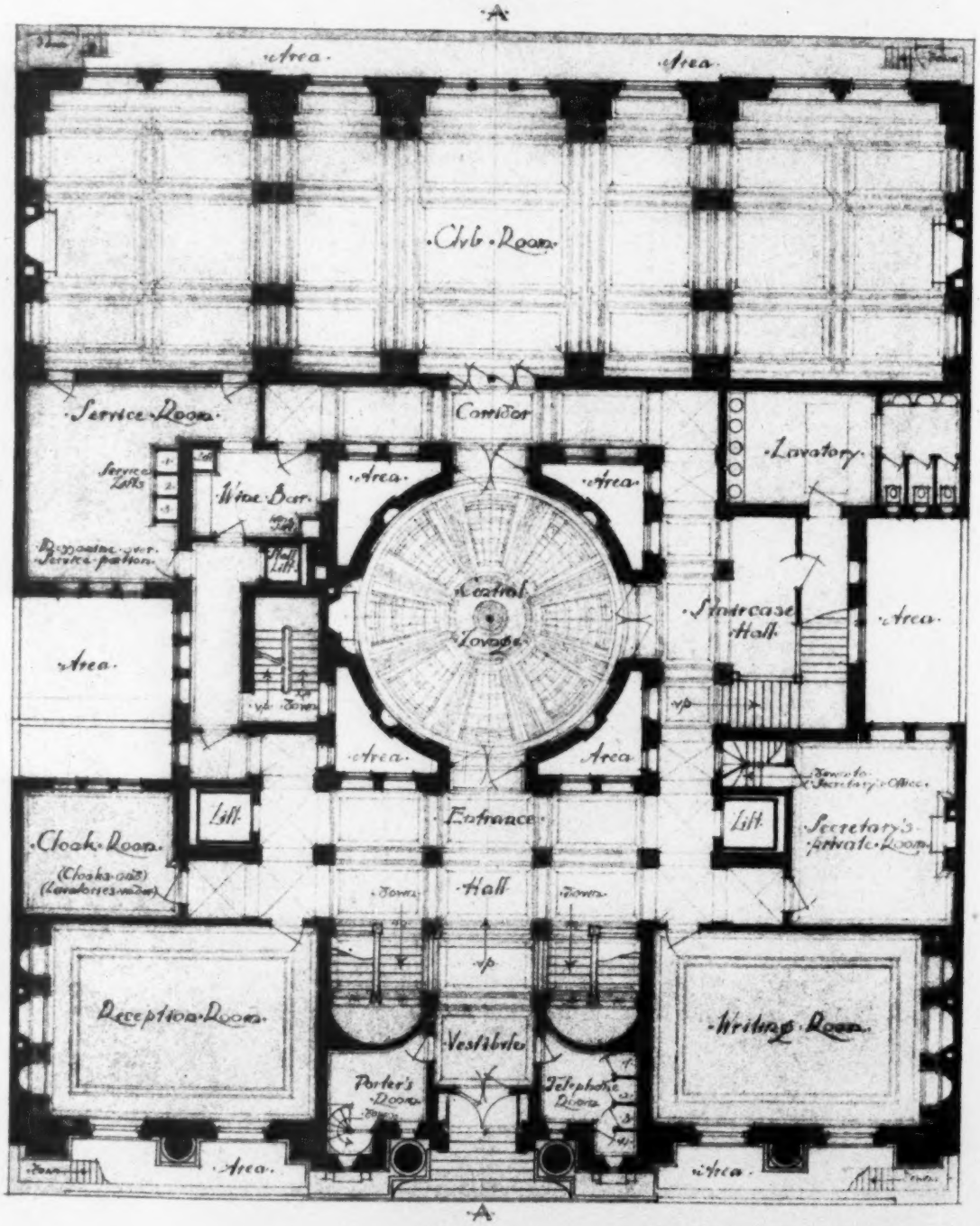


NORTH ELEVATION.



GROUND FLOOR PLAN.

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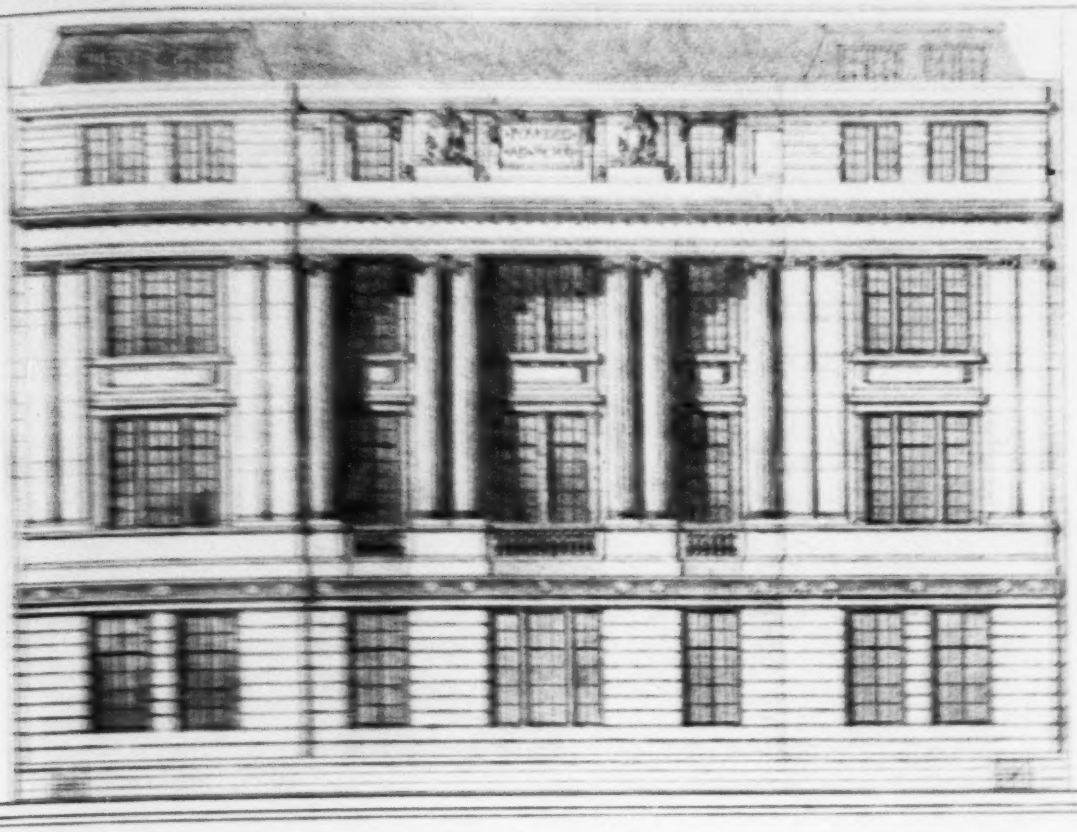
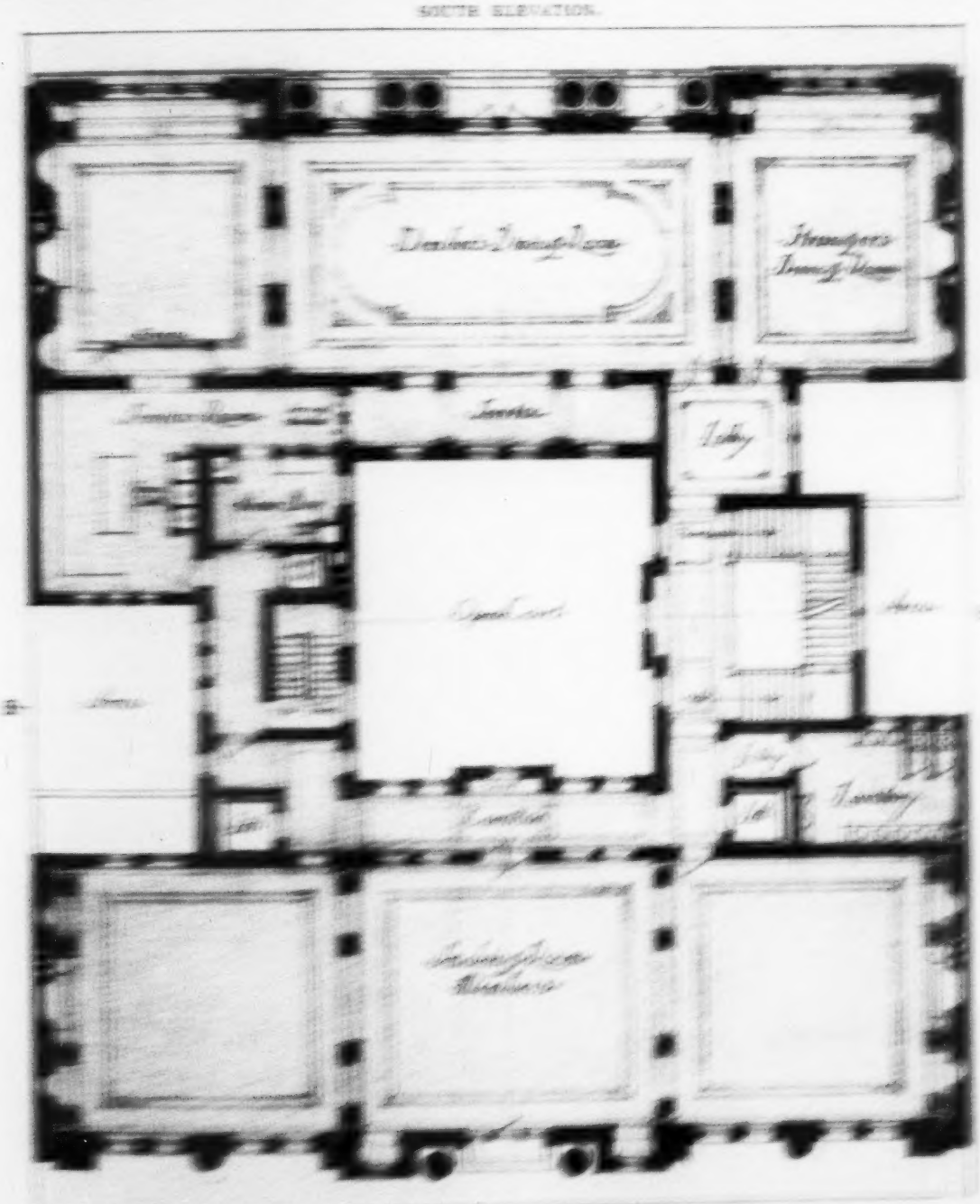
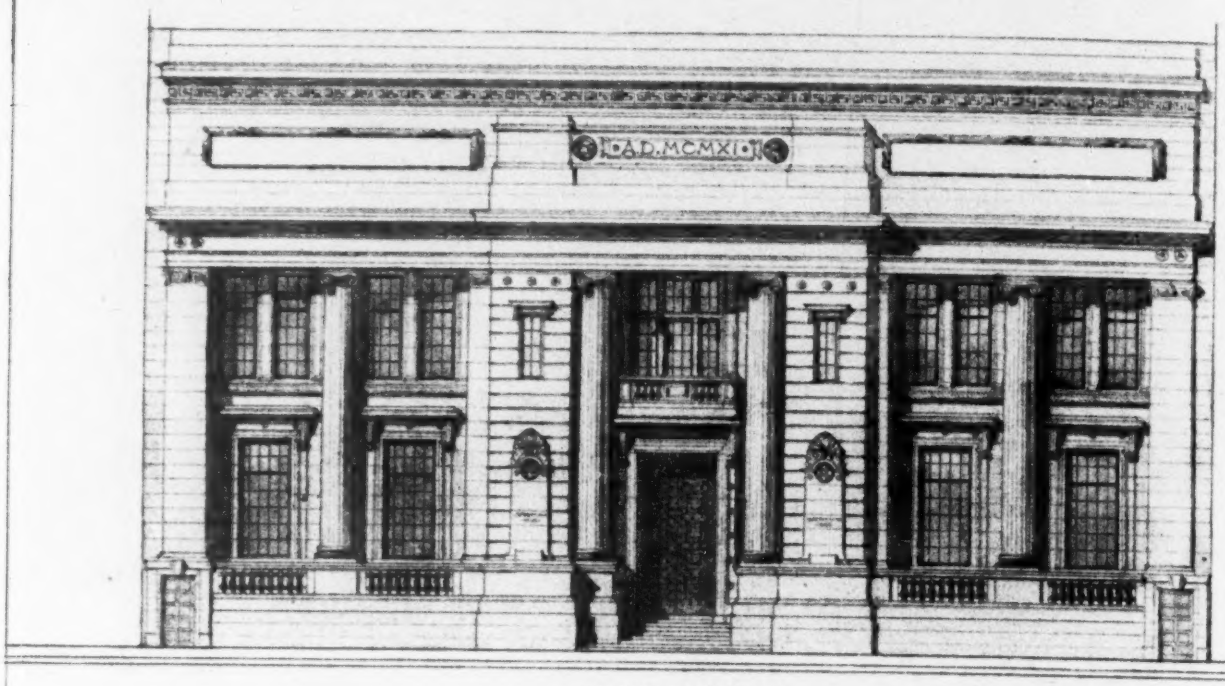
"INK-PHOTO" SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

DESIGN FOR A TOWN CLUB.—By Mr. E. Musmann, B.A.

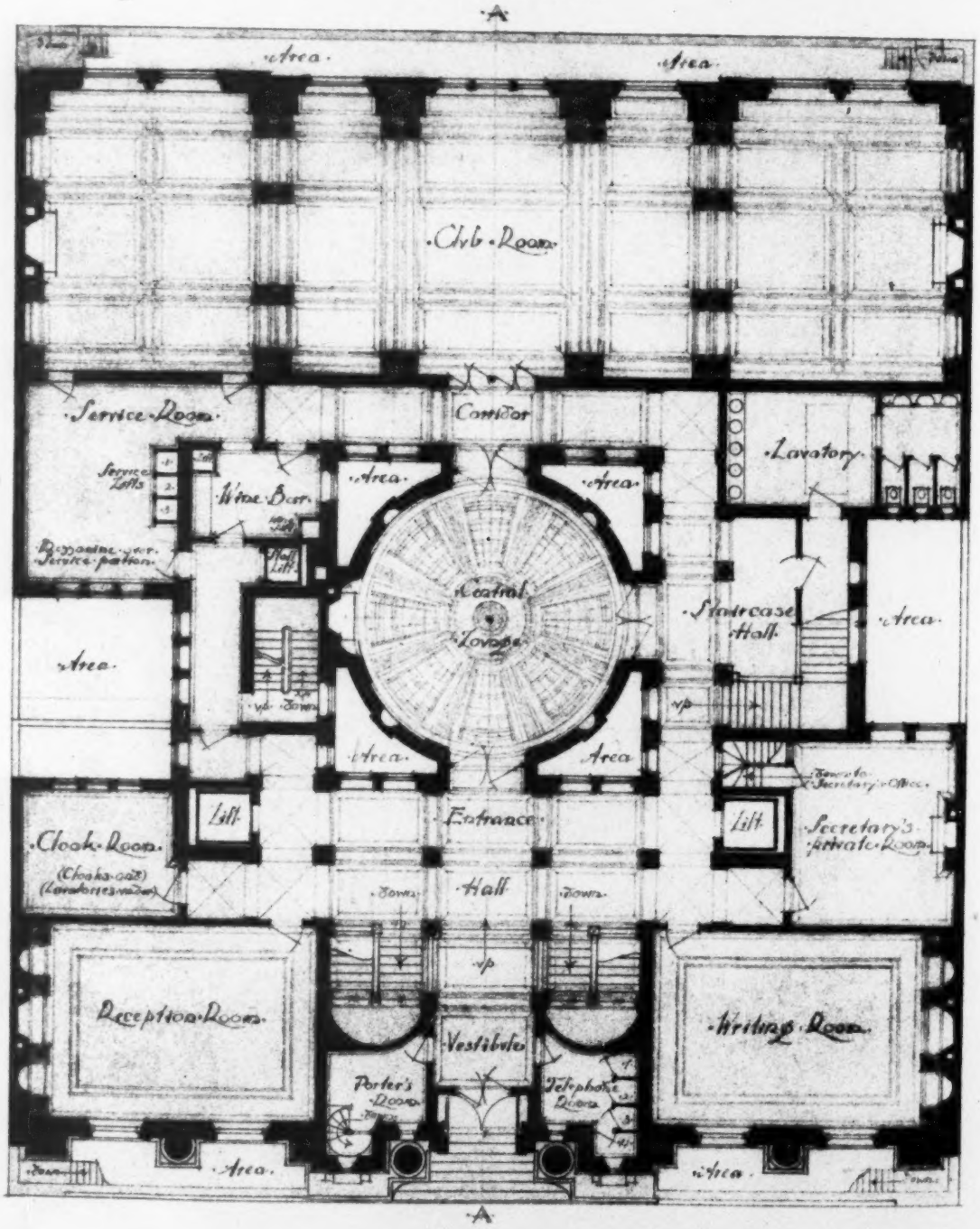


SOUTH ELEVATION.





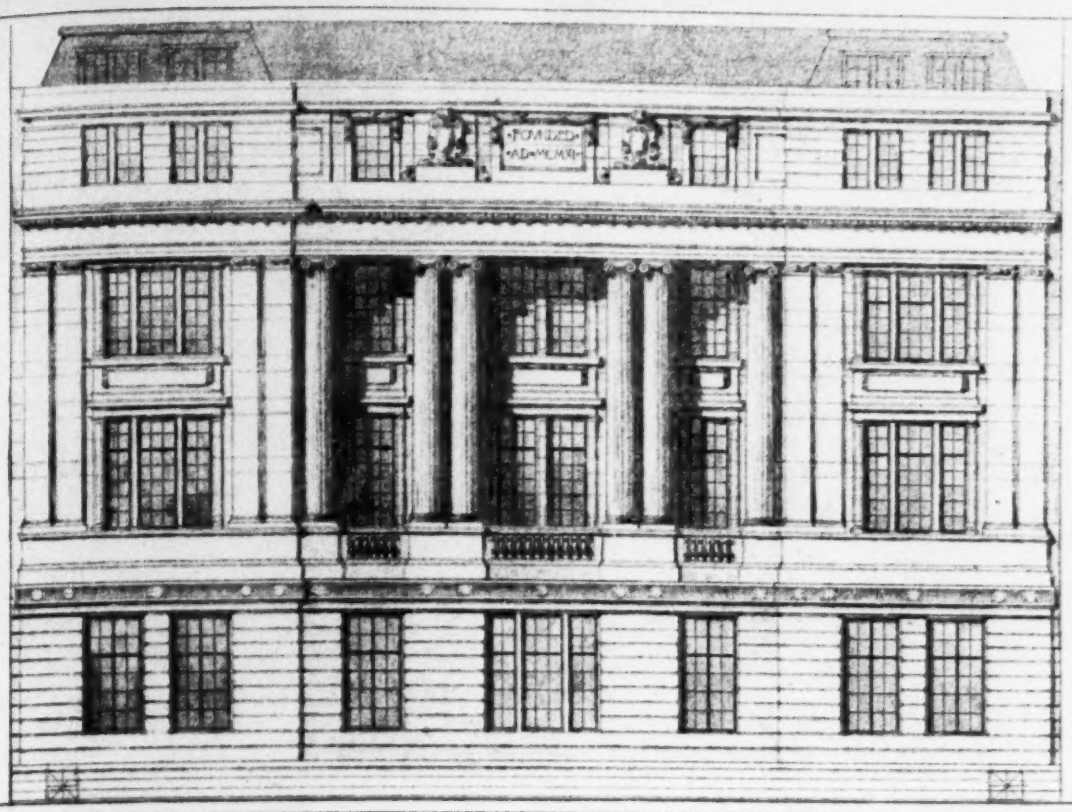
NORTH ELEVATION.



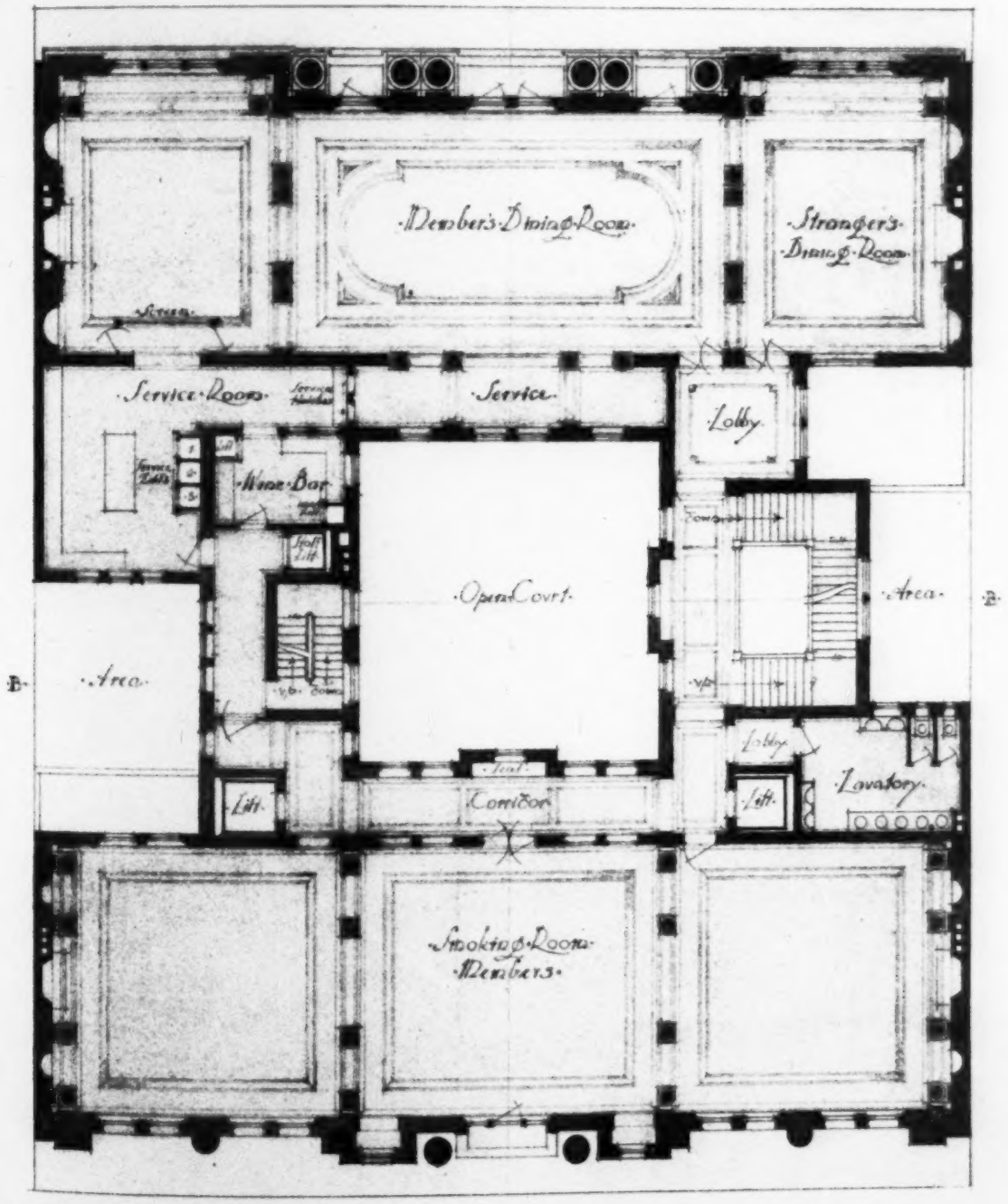
GROUND FLOOR PLAN.

"INK-PHOTO" SPRAGUE & Co LTD 68 & 70, DEAN STREET, SOHO, W.

DESIGN FOR A TOWN CLUB.—By Mr. E. Musmann, B.A.



SOUTH ELEVATION.



FIRST FLOOR PLAN.

"INK-PHOTO" SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

DESIGN FOR A TOWN CLUB.—By Mr. E. Musmann, B.A.

MONTHLY REVIEW · *of* · CONSTRUCTION.

THE MODERN SCHOOL GYMNASIUM: ITS EQUIPMENT AND PLANNING.

I.

THE rapidly-increasing use, in all grades of schools, of Ling's Swedish System of Educational Gymnastics since its adoption by the Board of Education calls for the provision, not only of the special apparatus necessary to the system, but also of suitable gymnasia. In the average school building, until now, no provision has been made for a gymnasium. In a few cases rooms have been provided for the purpose, and in others apparatus has been fitted in rooms primarily intended for other purposes. It is practically certain that this subject of instruction will be given greater prominence in the educational scheme of the future, and that the school gymnasium will become one of the most important features of the building, calling for special attention in planning, construction, and fitting.

The apparatus of the old German system—the horizontal bar and the parallel bars—has been discarded as being too limited in its application and tending mostly to the cultivation of mere show work. In its place has been evolved during the twenty years or more of the existence of the system apparatus which, when compared with the old appliances, appears at the first glance cumbersome and superfluous. This appearance is due to the fact that it is designed for class, as opposed to individual use. The main items in the equipment are the wall-bars, or rib-stalls, one bay of which is shown in Fig. 1, and the double-beam, or boom, in Fig. 2. With these pieces of apparatus it is possible to handle a class of forty pupils and have them all performing the same exercise together, thus economising time and avoiding the feeling of showing off which is so embarrassing to backward or sensitive pupils, and which is inseparable from the follow-on system at the horizontal bar. The wall-bars consist of elliptic-section bars, about 1½ in. by 1 in., spaced about 5 in. centre to centre in uprights 8 ft. high. The width of each stall is about 2 ft. 9 in. The uprights are fixed by nails driven into the floor and by holdfasts into the wall. As adjuncts to the use of the wall-bars are stools or benches, either being used according to the preference of the instructor. The stools are ordinary wooden stools, illustrated in Fig. 1, where one is shown placed upside down on a shelf

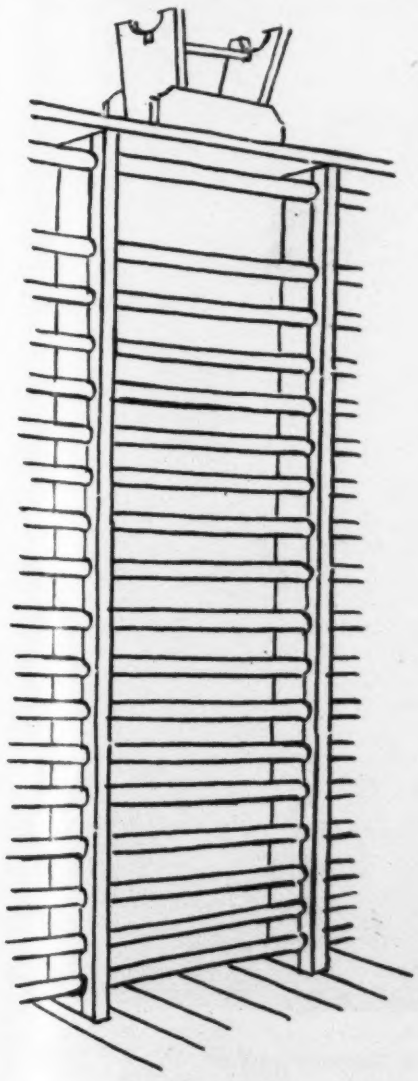


Fig. 1.

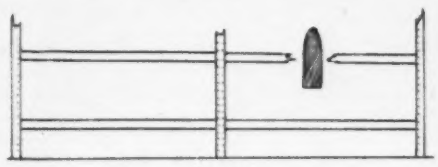


Fig. 2.

provided for their storage above the wall-bars. These have the advantage that they can be placed at a greater or less distance from the wall-bars in certain exercises to suit the differing lengths of limb in the pupils. They are also most convenient for removal, each pupil obtaining his or her own stool from the shelf and returning it there when done with. The benches are about the same height as the stools, 14 in., and of the length of four or five stalls of bars—11 ft. to 14 ft. When turned upside down they present a rail which does duty for the exercise known as balance-walking. They also have iron hooks on one end, which enable them to be attached to the wall-bars or beams for use in certain other exercises, so that they serve a greater variety of purposes than the stools, but are less adaptable to the individual pupil and are less easily stored.

The double-beam consists of two beams of section, as Fig. 2, about 6 in. by 2½ in., placed one above the other in upright guides, so that they can be adjusted for height, but are held secure against any lateral movement. They are placed across the room and generally reach from wall to wall. They are fitted in a great variety of ways to meet different conditions, but in their most convenient form they are fitted with a centre upright dividing them into two spans. The whole arrangement must be portable, so that the floor can be easily cleared for free-standing exercises. Many ingenious methods of removing the centre upright are in use, in most of which the counter-balance is a prominent feature. Sometimes it is lowered into a trench in the floor, sometimes swung up to the ceiling, sometimes suspended from an overhead rail and run along that to the wall. In the very simplest form of the apparatus, used in barracks, but not to be recommended for school use, the centre upright is carried to its place by hand and set up with stays to the floor.

In a gymnasium equipped for forty pupils there would be two sets of double-beams, which would divide the room approximately into three parts.

The climbing rope is generally the next most important piece of fixed apparatus. There would be ten or twelve ropes hung from a beam at sufficient distance from the end of the room to allow for a clear swing. Inclined climbing ropes, set up by block and tackle, are also used.

Other fixed apparatus, not so essential but extremely useful as soon as the pupils get beyond the elementary stage, are the vertical and horizontal "square" or "window" ladders. The former is a framework made up of squares of about 21 in. by 21 in., four, five, or six squares wide according to circumstances, and the full height of the room. When in use it must stand at least 3 ft. clear of the wall and be bolted firmly to the floor. Sometimes it is hung on overhead rails, which enable it to be run bodily backward to the wall; sometimes it is hinged at the head and merely swung back at the foot. The horizontal square ladder is similar in construction, but is only three squares high—width according to convenience. It is also fixed in a variety of ways. The arm ladder is in two parts, one standing upright against the wall, the other made fast to it by sliding grips, so that it can be brought forward and rested on the beam in the position shown in Fig. 3.

II.

The planning of a gymnasium must necessarily be affected by many different considerations, as to expense, situation, combination with other parts of a school, etc., and possibly many things which would be looked upon by an enthusiastic instructor as essential may have to be cut out by the "powers that be." But the time has passed when any space which did not happen to be otherwise utilised was looked upon as being good enough for a gymnasium and as requiring no special adaptation. It is safe to predict that in a few years' time the gymnasium will be looked upon as at least equal in importance to the chemical and physical laboratories on the planning and equipment of which so much money and thought is expended nowadays.

The main requirements of the ideal gymnasium are as follow:—A detached building is desirable, in order to obtain the maximum amount of light and ventilation. The room ought to be at least 40 ft. long by 20 ft. wide and 14 ft. high. The size which is most frequently recommended is 50 ft. by 25 ft. by 16 ft. The windows should be set high, above the tops of the wall-bars, and should run practically all round the room. Ample scope for ventilation should be afforded, not by means of a few little hoppers, but by casement frames, which will admit of all windows being thrown completely open on a summer day. Draughts are guarded against by the fact that the windows are so high. The floor should be boarded in the ordinary way and should lie on joists—not on concrete. A certain amount of spring is absolutely necessary. Hard wood and parquetry are unsuitable and concrete absolutely taboo. The boards should be laid across the room, their joints thus affording some safeguard against slipping in running and jumping exercises. This arrangement also ensures more equal wear than when the boards are laid lengthwise. The floor should be oiled by two or three coats of linseed oil to render it dust and waterproof. The oiled floor is wiped over with a wet swab between lessons to remove dust and dries in a few minutes. Many of the exercises are performed by the pupils in a sitting or prostrate position on the floor, and cleanliness is therefore imperative. Varnish

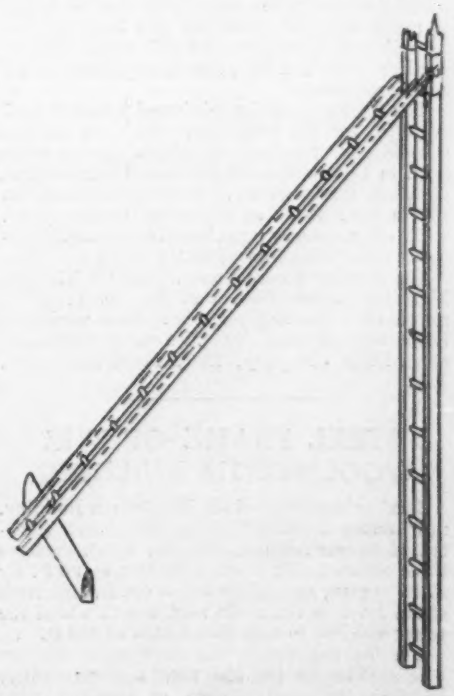


Fig. 3.

and the usual floor polishes are unsuitable as producing a slippery surface.

The wall-bars are arranged along the sides of the room, so that the teacher, standing at the end of the room, may see at a glance whether the pupils are performing the exercises correctly.

In some buildings the floor is so designed that a small trap-door in front of each stall of the wall-bars can be lifted and the stools put down below the floor in a position instantly accessible and quite out of the way.

The position of beams and climbing ropes has been already suggested. Where the double-beam is fitted to lower into a trench below the floor this trench has to be arranged for. It must be damp-proof, as any damp will warp the beams and prevent their working freely in the grooves of the uprights, may be lined with wood, concrete, or asphalt, and must be about 1 ft. wide. The depth varies according to the design of the apparatus.

The only entrance to the gymnasium should be through the dressing-rooms, so that all outdoor garments and boots or shoes and with them all wet or dust may be left there. Dressing-rooms are most conveniently placed at the ends of the building, so that the side walls, required for wall-bars, may not be broken up by doors, and should be fitted up with lockers and particularly with shower baths.

Provision will have to be made in the roof for the suspension of ropes and ladders, and possibly for the travelling uprights of beams. (Beams with suspended uprights and counterbalance weights are strongly to be recommended as most suitable for school use.)

By a little consultation between the architect and the maker of the apparatus a certain amount of ornamental feeling, sadly lacking at present, can easily be obtained in parts of the apparatus, removing much of its uncompromising nature and enabling it to appear more as part of the building and less as an ill-considered addition. The red pine of which the apparatus is made is, of course, capable of being stained a darker colour, removing the feeling of cheap, temporary construction, which is, to some people, inseparable from light-coloured wood.

REINFORCED CONCRETE SILO AT THORNABY-ON-TEES.

THE site of this silo is at the Cleveland Flour Mills, Thornaby-on-Tees, near the River Tees. A concrete raft foundation carries the silo proper. The number and sizes of the bins are approximately as follows:—No. 12 bins, size 12 ft. by 12 ft. and 80 ft. high: No. 12 bins, size 6 ft. by 6 ft. and 80 ft. high. The total weight of grain in the silo bins is about 4,000 tons, which may be unequally distributed, one bin being full whilst all the surrounding bins are empty, or one outside row being full whilst the others are empty, so that each bin is practically self-contained and is reinforced to maintain throughout its full height perfect rigidity when full of grain irrespective of all adjoining bins.

The thickness of the reinforced concrete wall is 5½ in. for the large bins and 4 in. for the sub-divisions forming small bins. Outer walls 8 in. in thickness, with additional thickness at pilasters, parapets, etc. Over the tops of the bins a floor 4½ in. in thickness is constructed, with all necessary openings for shoots, manholes, etc., being formed in the same.

The architects were Messrs. Gelder & Kitchen, FF.R.I.B.A., of Hull, and Mr. E. P. Wells acted as consulting engineer. The work has been carried out by Messrs. the Stuart's Granolithic Company, Ltd., Fenchurch-street, E.C.

STEEL FRAME OF THE WOOLWORTH BUILDING.

THE main portion of the Woolworth Building, now under construction in New York (illustrated in our issue of May 26, 1911), encloses three sides of a light court measuring 95 ft. by 37 ft. in plan, and will be about 400 ft. high from street level to the main roof, above which the tower will rise to a further height of 400 ft.

For the support of the sixty main columns destined to receive the weight of the entire building foundation piers of concrete have been carried 40 ft. down to solid rock.

Upon the piers are steel grillages and distributing girders and cantilevers. The grillages consist of heavy I-beams laid in two or more tiers, according to the load to be carried, and embedded for protection in 1 : 2 : 4 Portland cement concrete. The distributing girders extending from pier to pier were laid in trenches before the general excavation was carried down to the same level.

To furnish some idea as to the duty of these members we may say that one of them, designed for supporting one of the tower columns, representing a load of 4,250 tons, measures 5 ft. 9 in. wide by 8 ft. deep by 23 ft. long, and weighs 58 tons.

Seven girders of the same dimensions and weight are included in the foundations, the other distributing girders weighing from 22 tons to 27 tons each.

Steel for the superstructure was sent from the works of the American Bridge Company to the goods depôt of the Pennsylvania Railroad at Greenville, New Jersey, where it was sorted and dispatched to New York in lighters as required, being transported through the streets on special lorries.

The largest column section delivered on the site measures 30 ft. long and weighs 40 tons. The average weights of the columns are as follows:—First tier, 40 tons; second tier, 33 tons; third tier, 31 tons; eighth tier, 15 tons; fourteenth tier, 12½ tons; main roof, 10 tons.

On August 11, 1911, the first grillage beams were delivered, and on September 15, 1911, the first foundation girders were received, the first columns arriving ten days later, and the first consignment of steel for the superstructure coming to hand on October 20, 1911.

On the last-mentioned date the first columns were erected, and by the end of November the steel frame had been constructed up to street level.

By April 6, 1912, the frame had been carried up to the height of the main roof, the structure to that level including thirty stories and about 17,000 tons of steel.

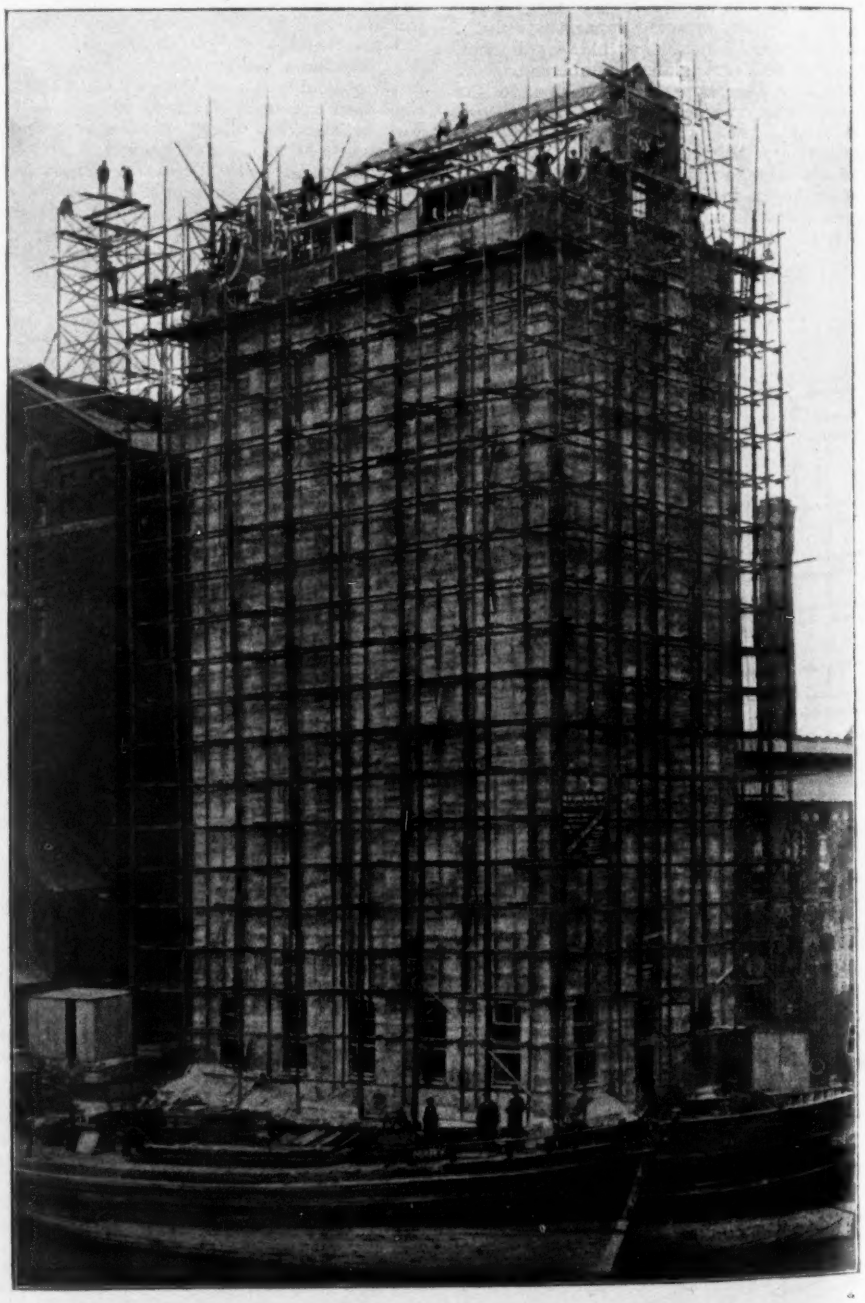
The work of erection was performed by four derrick gangs of eight men each, who were able to complete two tiers per week, and whose record was 1,153 tons of steel erected in six consecutive days of eight hours each.

It is interesting to record the fact that although the contract conditions required the whole of the steel to be erected by July 15 last, this part of the work was practically finished by the end of June.

The construction plant provided for erecting the superstructure included four steel guy derricks, with the lifting capacity of 30 tons, and one timber guy derrick of 15 tons capacity.

These derricks commanded the entire site and the adjacent street. Consequently they could be employed for unloading lorries and delivering the steel to required positions in any part of the building.

The large amount of riveting necessary in the steel frame was performed by twenty-



Reinforced Concrete Silo at Thornaby-on-Tees.

Messrs. Gelder & Kitchen, FF.R.I.B.A., Architects.

two gangs of four men each, by whom about 300 rivets were inserted per day of eight hours, with the aid of pneumatic riveting hammers.

The riveters were followed by a gang of thirty-five painters, who applied two coats of paint to all the steelwork.

BOYS' SCHOOL, STRAND-ON-THE-GREEN.

A NEW school for 420 boys has been erected by the Chiswick Urban District Council at Strand-on-the-Green. About 2,800 sq. yds. of site have been covered, the school occupying about 440 sq. yds. The playground has been raised and tar-paved for an area of 1,850 sq. yds., and about 510 sq. yds. have been left for the boys' gardens.

The whole area has been enclosed by solid unclimbable iron railing, but double gates have been fixed for the admission of the fire escape should it be required. The existing southern gate will form the main entrance for boys. The covered playground at present forms part of the school, but should the same be required for open-air classes, an additional covered playground at the ground level may be added

The whole area is drained by gullies only at the sides, thus leaving an even and unbroken surface for games. The heating chamber and coal store, which forms the only basement, is provided with a fixed semirotary pump for lifting all waste or rain water to the general drainage level.

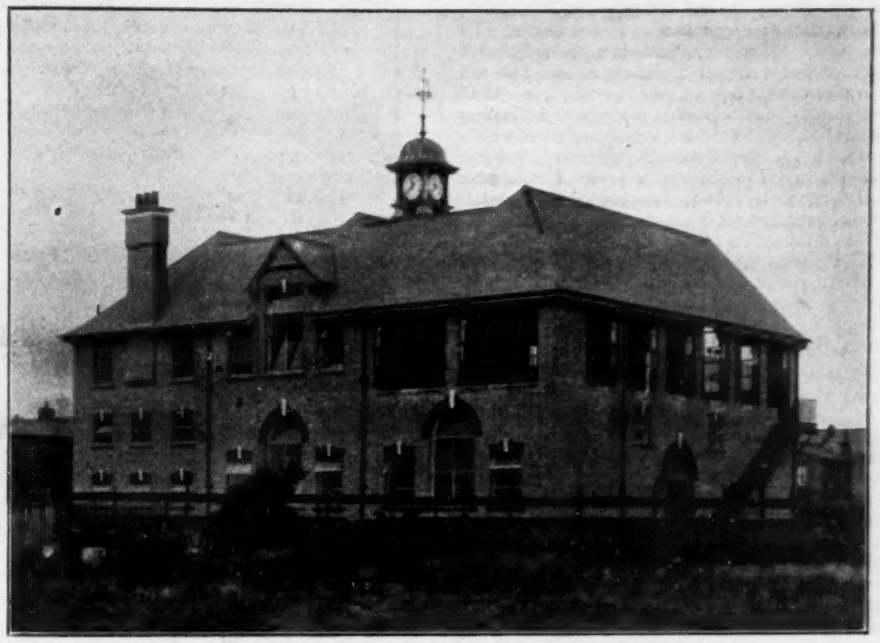
Lavatories are provided in the headmaster's room (for use during medical examination) and in cloak-rooms on mezzanine and ground floors, which discharge into the foul-water sewer in Brook-road. One master's and two additional boys' water-closets have been provided, with extra urinal accommodation, whilst three "Purita" fountains placed outside the school provide a continuous supply of drinking water.

The walls are of stock bricks with red brick dressings and blue brick plinth, all below damp-proof course being in cement mortar. The roof is of wood construction, covered with boarding, felt, and best Broseley tiling.

The internal surface of the walls to the staircase is finished with brown salt-glazed brick facings, which material also forms a dado 4 ft. high on both floors, the remaining surface being distempered. The thresholds and steps are of York stone, whilst the window-sills are made with blue brick blocks, and arches of rubbed brick with Portland keystones. Bull-nosed angles are provided both externally and internally at all projecting angles.

The windows in all walls are formed with steel casements, with hopper openings for prevention of draught and better ventilation. This type also gives a maximum amount of light for the size of the opening. The borrowed lights are similarly of steel construction and are made to open for cross ventilation.

The floors to classrooms are of steel and concrete, finished with 1½-in. pitch-pine blocks laid to herring-bone pattern, whilst the staircase is ferro-concrete and the cloak-rooms and corridors are all finished with granolithic paving. Blue brick paving is adopted in the basement.



Boys' School, Strand-on-the-Green, Chiswick.
Mr. Edward Willis, Architect.

In addition to the ordinary windows, extra ventilators are provided to all classrooms, four opening direct into the external air and four discharging through a ventilating turret about 40 ft. high. Fanlights are fixed to the classroom doors, and at all times cross-ventilation in either direction is possible.

The heating of classrooms, lavatories, corridors, etc., is effected by a low-pressure system regulated automatically, with sectional boiler in the basement and radiators in all classrooms, etc.; the master's and assistant masters' rooms are warmed by open fires.

The artificial lighting throughout is by means of gas, inverted incandescent mantles being used in classrooms and plain guarded burners in corridors.

All rooms are provided with the Magneta Time Company's clocks, and the four faces of the ventilating turret have been provided with dials worked by the same master clock in the headmaster's room. A special pendulum fire alarm and telephone is fixed in the ground-floor corridor at the foot of the staircase, ringing direct to the fire-station. The turret, chimney-stacks, etc., are protected by lightning conductors connected to copper earth plate on the southern side.

The building comprises two floors and basement heating chamber and coal store. The ground floor includes bicycle store, three classrooms for forty-eight and two for sixty boys, with lavatories and cloak-room accommodation.

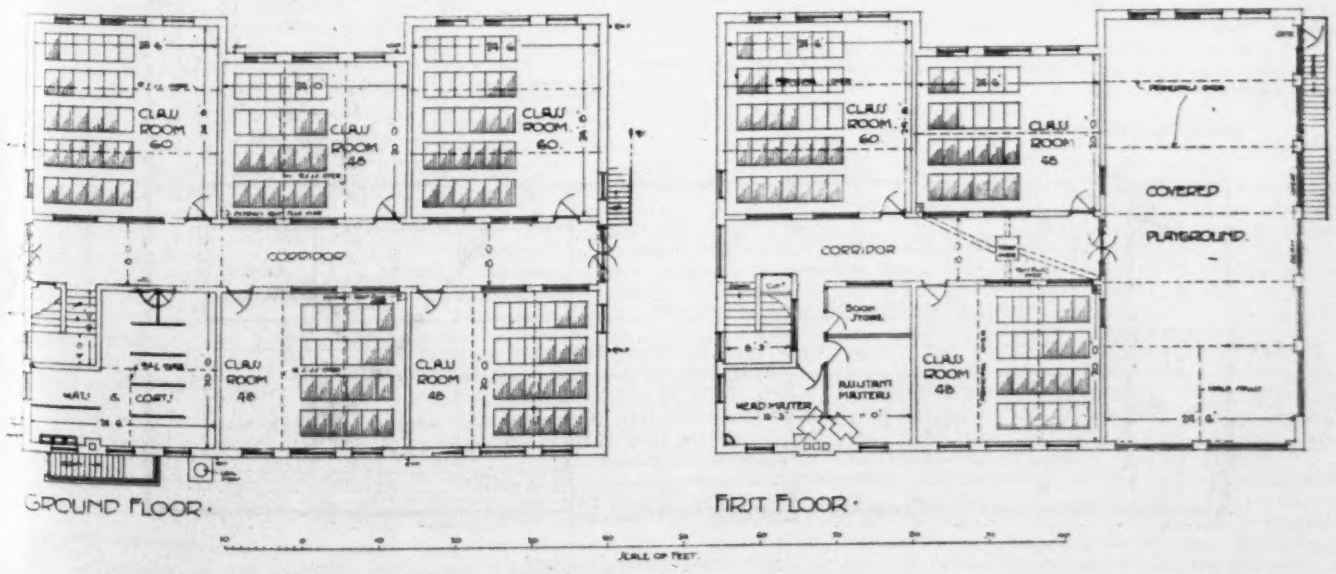
The first floor has only one classroom for sixty boys and two for forty-eight, making 420 as the total present school accommodation. There are separate rooms for the headmaster and assistant masters, with large book store and extensive covered playground, approximately 1,300 sq. ft. in area, which could be used if desired for open-air classes, and from this is an iron and steel escape staircase to the general playground.

The lavatory and cloak-room accommodation for first-floor scholars is on the mezzanine floor. The design was prepared by Mr. Edward Willis, Assoc.M.Inst.C.E., etc., Architect to the Education Committee, and the contract was carried out under his supervision by Mr. W. J. Maddison, of Canning Town, Mr. J. Empson being the clerk of works.

It is anticipated the final cost of the building will not exceed 5,000*l.*, or about 12*l.* per school place.

COW-STABLE FOR EMIGRATION TRAINING FARM.

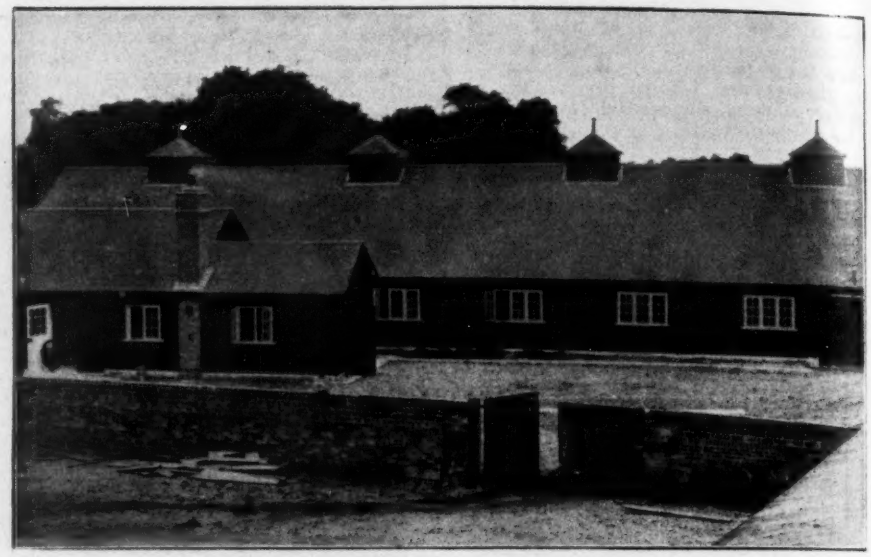
A NEW cow-stable has recently been built for the Hon. Rupert Guinness, C.B., C.M.G., M.P., at Park Farm, Woking, Surrey. It forms an addition to the buildings already erected, and is equipped with modern appliances for instructing and training young men who intend farming in Canada and the Colonies. The building has been planned on the latest Canadian



Boys' School, Strand-on-the-Green, Chiswick.
Mr. Edward Willis, Architect.

lines and fitted almost entirely with Canadian fittings, such as cow-stalls, loose boxes, calf pens, etc. It is constructed with red brick plinth. The external framing above the sill is weather-boarded. The interior is lined throughout with asbestos sheeting, including the ceiling. The roof is covered with red sand-faced tiles. The floors throughout are of 2-in. granolithic laid on a bed of concrete. Special care has been given to lighting, ventilation, heating, and drainage.

The building has been designed by Messrs. T. H. Roberts-Wray & J. A. Hale, architects, of John-street, Adelphi, W.C. The contractors were Messrs. Kirk & Randall, of Woolwich; the heating and dairy fittings by Messrs. Burnard & Co., of Vauxhall.



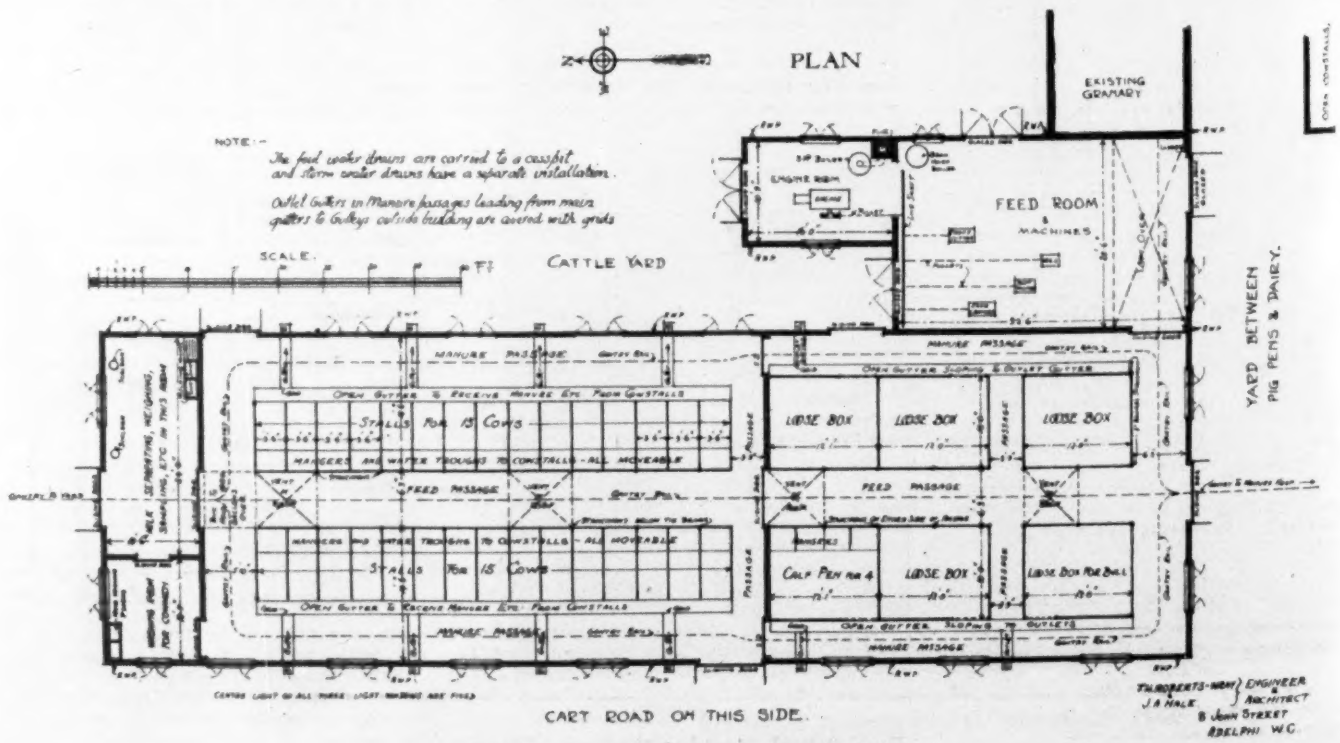
Cow-Stable for Emigration Training Farm.

VENTILATION.

IN his address before the Physiology Section of the British Association meeting in Dundee, Mr. Leonard Hill, the President of the section, discussed the conditions necessary to the maintenance of a healthy body, and controverted the common assumption that the air is made deleterious to health by the introduction of chemical impurities. In the course of his remarks he said that everyone thought that he suffered in an ill-ventilated room owing to some change in the chemical quality of the air. The alterations in chemical composition of the air in buildings where people crowded together and suffered from the effects of ill-ventilation had nothing to do with the causation of these effects. Satisfied with the maintenance of a specious standard of chemical purity, the public had acquiesced in the elevation of sky-scrapers and the sinking of cavernous places of business. Many had thus become cave-dwellers, confined for most of their waking and sleeping hours in windless places, artificially lit, monotonously warmed. The sun was cut off by the shadow of tall buildings and by smoke. The bracing effect of cold was of supreme importance to health and happiness. We became soft and flabby and less resistant to the attacks of infecting bacteria in the winter, not because of the cold, but because of our excessive precautions to preserve ourselves from cold, and the prime cause of "cold" or "chill" was not really exposure to cold but to the over-heated and confined air of rooms, factories, and meeting-places.

He recently investigated the case of clerks employed in a great place of business, whose working hours were from nine to six on three days and seven to nine on the other three days of each week. These clerks worked in a confined space—forty to fifty of them in 8,200 cubic ft., lit with thirty electric lamps, cramped for room, and overheated in warm summer days. It was not with the chemical purity of the air of such an office that fault was to be found, for fans and large openings ensured this sufficiently. These clerks suffered from their long hours of monotonous and sedentary occupation, and from the artificial light, and the windless, overwarm, and moist atmosphere. What was the use of the State spending a million a year on sanatoria and tuberculin dispensaries, when those very conditions of work continued which lessened the immunity and increased the infection of the workers? In the last few years the rush and excitement of modern city life had increased, together with the confinement of workers to sedentary occupations in artificially lit, warm, windless atmospheres. The same conditions pertained to places of amusement, eating-houses, and tube railways. Central heating, gas-radiators, and other contrivances were now displacing the old open fire and chimney. The change greatly improved the economical consumption of coal and the light and cleanliness of the atmosphere. But, in so far as it promoted monotonous, windless, warm atmospheres, it was wholly against the health and vigour of the nation. The open fire and wide chimney ensured ventilation, the indrawing of cold outside air, streaky air—restless currents at different temperatures, which struck the sensory nerves in the skin and prevented monotony and weariness of spirit. The height of houses prevented the town-dweller from being blown upon by the wind. He worked, ate, and was amused in warm, windless atmospheres, and suffered from a feeble circulation, a shallow respiration, a disordered digestion.

The widespread belief in the presence of organic poisons in the expired air was mainly based on the statements of Brown Sequard and D'Arsenval, statements wholly unsubstantiated by the most trustworthy workers in Europe and America. These statements had done very great mischief to the cause of hygiene, for they led ventilating engineers and the public to seek after chemical purity and neglect the attainment of adequate coolness and movement of the air. The efficiency of workers in mills, mines, tunnels, stokeholds was vastly increased by the provision of a sufficient draught of cool and relatively dry air, so as to prevent over-taxing of the heat-regulating mechanism. The electric fan had vastly improved the conditions of the worker in the tropics. He would suggest that each clerk should have a fan just as much as a lamp on his desk. It would pay the employer to supply fans. All the efforts of the heating and ventilating engineer should be directed towards cooling the air in crowded places and cooling the bodies of the people by setting the air in motion by means of fans. They had very great inherent powers of withstanding exposure to cold. The bodily mechanisms became trained and set to maintain the body heat by habitual exposure to open-air life. The risk lay in over-heating our dwellings and over-clothing our bodies, so that the mechanisms engaged in resisting infection became enfeebled, and no longer able to meet the sudden transition from the warm atmosphere of our rooms to the chill outside air of winter. The dark and


PLAN
EXISTING GRANARY
NOTE:-
The foul water drains are carried to a cesspit and storm water drains have a separate installation.
Outlet Gutters in Manure passages leading from main gutters to Gulleys outside building are covered with grids
SCALE.
CATTLE YARD
FEED ROOM & MACHINES
ENGINE ROOM
YARD BETWEEN Pig PENS & DAIRY.
MANURE PASSAGE
STALLS FOR 15 COWS
LOOSE BOX
FEED PASSAGE
CALF PEN FOR 4
CART ROAD ON THIS SIDE.
T.H.ROBERTS-WRAY J.A.HALE ENGINEER & ARCHITECT 8 JOHN STREET ADELPHI W.C.

Cow-Stable for Emigration Training Farm.

gloomy days of winter confined us within doors, and, by reducing our activity and exposure to open air, depressed the metabolism; the influence of smoke and fog, gloom of house and streets, cavernous places of business and dark dwellings, intensified the depression. The essentials required of any good system of ventilation were (1) movement, coolness, proper degree of relative moisture of the air; (2) reduction of the mass influence of pathogenic bacteria. The chemical purity of the air would be adequately ensured by attendance to the essentials.

BRITISH STANDARD SPECIFICATION FOR STRUCTURAL STEEL FOR BRIDGES, ETC.

A NEW edition of the British Standard Specification for Structural Steel for Bridges and General Building Construction (Report No. 15, revised August, 1912) has recently been issued. The new issue is of importance in view of the fact that the London County Council (General Powers) Act, 1909, requires that all rolled steel used in the construction of skeleton-frame work for buildings shall comply with the requirements of this specification.

Since its first issue in June, 1906, the Committee from time to time had brought before them points which had arisen in connexion with its use, and the present issue embodies the necessary amendments in regard to these. Some of the more important modifications to the specification are as follows:—

1. The classification of the material dealt with into two categories, A Steel and B Steel.

2. The increase of the allowable Phosphorus Content in B Steel from ·07 to ·08 per cent.

3. The increase of the upper limit of tensile strength for plates, sections, and bars (other than rivet bars) from 32 to 33 tons per square inch.

4. The reduction of the lower limit of tensile strength for rivet bars from 26 to 25 tons per square inch.

5. The insertion of clauses dealing with (*a*) tests by an independent expert, (*b*) rejection after delivery, and (*c*) arbitration in cases where this is not otherwise provided for.

Following the procedure adopted in the revision of the British Standard Specification for Portland cement, the text of the specification has been settled in consultation with the Committee by Mr. A. A. Hudson, K.C. (standing Counsel to the Committee), with a view of ensuring that so far as practicable it has the meaning intended by them, and the specification has been remodelled in accordance with his advice.

The specification may be obtained from any bookseller or from the Offices of the Committee, 28, Victoria-street, Westminster, S.W., and is published for the Committee by Messrs. Crosby Lockwood & Son.

CONSTRUCTION NOTES.

Metallic Filament Lamps. RECENT investigation, including microphotographic study of "drawn-wire" and "extruded" filaments for electric incandescent lamps, has demonstrated the fact that the continued high temperature at which such lamps are used has the effect of causing crystallisation of the metal. The larger crystals which are chiefly responsible for fracture of the filaments appear to be built up by accretion upon the fine crystalline formation in the original structure of the metal. Drawn-wire filaments having finer initial crystallisation are stronger than extruded filaments, and as indicated by the investigation mentioned must remain so until the metal has become crystallised, a process obviously requiring more time than that involved in the crystallisation of extended filaments.

Effect of Vibration on Electric Lamps. WITH the object of obtaining data as to the relative merits of incandescent electric lamps, a series of tests has been conducted in the Argentine Government Navy Laboratories, with special regard to the capacity of the filaments for resistance to shock and vibration.

The tests were applied to four well-known makes of metallic filament lamp and also to a standard carbon filament lamp.

The results, showing the length of time which the lamps were able to withstand "severe vibration" before failure of the filament, were as follows:—

Metallic filament lamp No. 1, twenty-five minutes; metallic filament lamp No. 2, thirty minutes; metallic filament lamp No. 3, forty-five minutes; metallic filament lamp (Madza drawn-wire), 140 minutes; carbon filament lamp, thirty-five minutes.

Acid-Resisting Alloys. PROFESSOR BORCHERIS, of Aix-la-Chapelle, has recently announced the possibility of producing alloys of iron capable of resisting attack by acids, and remaining amenable to ordinary methods of treatment and manipulation in the workshop. The new alloys are prepared by adding from 2 to 5 per cent. of molybdenum to an alloy of ferro-chrome containing very little or no carbon, and not less than 10 per cent. of chrome. An alloy containing only 36 per cent of iron as against 60 per cent. of chrome and a small proportion of molybdenum has been found to be insoluble in boiling aquafortis, while possessing all the essential qualities of iron and being suitable for working in the ordinary manner.

The Soundness of Cements. MR. H. E. KIEFER, in the *Journal of Industrial Engineering Chemistry* for 1912, describes tests and their results which show that the presence of free anhydrous lime cannot be the sole cause of the failure of certain samples of Portland cement to pass the boiling test.

H. le Chatelier has stated that the addition of 1 per cent. of freshly-calcined lime to a sound cement will render it unsound, but in the author's experiments finely-ground lime was added in relatively large quantities, in one case up to 25 per cent., to samples without rendering them unsound. In all the cases tried, the quality of the cement was improved by finer grinding or by removing the coarser particles by sifting.

In other experiments in which the unsound cements were exposed to moist air at 150 deg. Fahr., the absorption of from 0·1 to 0·27 per cent. of moisture sufficed to render the cements sound. It was found that when cement is allowed to stand, either in a sealed jar or exposed to the air, the coarser particles become progressively finer, and it is considered probable that the seasoning of unsound cement consists in the disintegration of the coarser portion. In this coarser portion free lime may be present encased in glassy particles, and the disintegration be caused or accelerated by heat and moisture. It has been found that the moisture need not be in sufficient quantities to hydrate the free lime, but merely to render the coarser particles sufficiently fine to permit hydration before the cement has set.

"Steam-Cured" Cement Mortar. TESTS conducted with the object of determining the effect of high-pressure steam on the strength of cement mortar, show that the process of hardening is accelerated, and the compressive resistance of the material is proportionate to the pressure of the steam and the duration of the exposure. The tests also indicate that for steam curing the mortar should be of medium consistency, which is better than a very dry or a very wet consistency. Another point to be noted is that the mortar should have developed initial set before being treated with steam.

Setting Properties of Portland Cement. ACCORDING to Mr. G. Hentschel, in an article printed by the *Tonindustrie Zeitung*, the rate of setting of Portland cement is accelerated by the addition of alkaline carbonates. On the other hand, the addition of varying proportions of calcium sulphate retards the process of setting. The writer recommends that the catalytic effect of compounds such as those mentioned should be determined by comparative experiments.

Sodium and potassium carbonates exert an extraordinarily strong positive effect, while calcium sulphate has a relatively smaller negative influence. It is stated that the positive effect is more strongly marked in the case of finely-ground cements.

In the process of burning any alkali present in the raw materials is converted into an alkaline silicate which has no influence on the rate of setting, but after exposure to the air the silicate is slowly decomposed into silicic acid and carbonate, especially with the assistance of heat.

The pronounced effect of carbon dioxide and heat is stated as an explanation of the fact that rotary kiln cements change more readily than cements prepared in ordinary kilns, and often leave the mill in a quick-setting condition.

Steel and Wrought-Iron Pipes. Now that steel tubing is coming into more general use for steam and water, the subjoined notes may be found of service to our readers in enabling them to determine by inspection whether the tubing employed on any work is of steel or wrought-iron. Steel tubing is relatively smooth, and any scale on the surface appears in the form of small blisters, revealing a smooth and whitish surface on being scraped away. On the other hand, wrought-iron tubing is rough, lacking the perfect finish of drawn-steel tubing, and scale occurs in heavy flakes. Steel tubing can be flattened considerably without splitting, while iron tubing tends to open at the longitudinal weld. If broken, steel tubing shows a fine crystalline fracture, and iron tubing shows a jagged fracture indicating the fibrous nature of the metal.

United States Government Specification for Portland Cement. IN June, 1911, a Committee of Government engineers was appointed for the purpose of unifying the specifications for Portland cement used by the United States Government. After first arriving at a tentative specification, the Committee conferred with representative manufacturers and users of Portland cement and with the special committees of various engineering societies by whom the same question has been considered.

As a result of such conference the tentative specification was modified until substantial agreement was reached on all points except the methods of determining the normal consistency and time of setting.

An order signed by President Taft has recently been issued requiring that the specification as modified shall apply to all Portland cement purchased by or used in construction work connected with any department or branch of the United States Government.

It is recognised, however, that no specification can be regarded as final. Consequently the order provides that the specification may be modified from time to time by a departmental conference with the approval of the heads of the several departments.

Aluminium in Brass Castings. THE effects of adding aluminium to brass is to make the castings sounder and remarkably free from pin holes, while the metal runs better, and the castings come out of the sand very sharp and clean. According to the *Brass World*, the best method of adding the aluminium is first to make an alloy consisting of aluminium 1 part and zinc 3 parts, adding this alloy to the brass just before pouring. The proportion of aluminium required is very small, and the addition of too much makes the castings hard and apt to shrink considerably on cooling.

Physical Properties of Concrete. A MOST useful investigation now in progress by the National Bureau of Standards (U.S.A.) is one for the determination of the physical properties of concrete. At the suggestion of engineers and others interested in the subject, the Bureau have decided to inquire into the causes of cracking in concrete structures and the question of expansion and contraction joints.

For the purpose of the inquiry, reference marks have been placed upon typical old and new concrete work in Wayne County, Michigan, at Greenwich, Connecticut, and on the lock walls and elsewhere on the Panama Canal works.

Measurements will be taken from time to time during summer and winter to determine the expansion and contraction due to temperature variations, and to ascertain the changes of volume taking place during the hardening of the concrete.

THE BUILDING TRADE.

THE TRADE UNIONS CONGRESS.

THE proceedings of the Trade Unions Congress were commenced at Newport on the 2nd inst., under the presidency of Mr. William Thorne, M.P.

The address of the President bore a strong likeness to other Presidential addresses delivered on like occasions. Many of the leaders of the trade unions are men who are opposed to the existing order of things and who advocate the nationalisation of the means of production and distribution of wealth, and who see salvation in the suppression of the capitalist and the employer. If, however, they are convinced of the soundness of their views it is somewhat surprising that they never elaborate their policy. Year after year the same views are expressed in almost the same periods, but no attempt is made to explain a policy which involves changes of such magnitude, and the rank and file must be acquiring a shrewd suspicion that their leaders' reticence may be due to the impossibility and impracticability of the schemes which they put forward. Mr. Thorne in his address followed very much the conventional lines, and little is to be gained by such statements as that land and labour are the foundation of all riches and that the increase in wealth is not due to the capitalist class. The proprietor of the very smallest plot of land could instruct Mr. Thorne on the use and necessity of capital. Again, in discussing the distribution of wealth, what can be more misleading than to take the gross assessment for income tax in this country and compare it with the wages paid also in this country? Quite apart from the distinction between capital and wages, it must be remembered that owing to the action of the trade unions and to certain legislation, or threats of legislation, capital is invested abroad, and the foreign pay-sheets do not figure in this country, though much of the income produced abroad comes home to be assessed. Unreliable as is Mr. Thorne's comparison, the figures he quoted might have been very different if during the past twelve months there had been no railway strike, no coal strike, and no transport strike, and if nearly 39 million working days had not been lost in the first seven months of this year.

The President expressed himself opposed to any scheme of compulsory arbitration and as dissatisfied with the Trade Unions Bill, and in the latter connexion his observations as reported are somewhat remarkable. He claimed unlimited political powers for the unions, but his ideas of political powers appear to be to obtain control of the Army and Navy and the civil authority, so that they should not be used in the case of strikes. We venture to think that such an attitude is most damaging to the cause of trade unionism. The legality of strikes is fully recognised; not only are they legalised, but peaceful persuasion is allowed, and no action for tort can be brought against a trade union. Political action on the part of the unions is now being recognised by this Bill as well, and even the rights of minorities who do not favour the political policy adopted by the unions are very inadequately safeguarded. This being the state of the case, what deduction can be drawn from such observations as we have referred to above but that the unions, as represented by certain of their leaders, desire to be free to resort to intimidation, as that in connexion with strikes is the only thing which remains illegal and which calls for civil or military intervention? The patience of the public has been sorely tried in the recent strikes; the sympathetic strike does not invoke any sympathy from the public, which sees in it intimidation directed against itself; intimidation of non-unionists is distasteful to those with a sense of fair play, and the trade unions, if they wish to retain the extraordinary privileges already granted to them, will be wise if they emphatically dissociate themselves from and strongly condemn the acts of violence and coercion which are illegal and which have marked some of the strikes. On the last day of the Congress we regret to see that a resolution was passed by a large majority on a card vote declaring that in the interests of trade unionism, and with a view to securing the full benefits of awards and agreements fought for, trade unionists should refuse to work with non-unionists.

The debate on the question of the Trade Unions Bill was unusually interesting. On a card vote a resolution was passed by a large majority to oppose the Bill in its present form, as the Congress claimed complete political freedom. The Bill recognises the right of unions to engage in political activity, thus practically overruling the Osborne judgment, and the only limitations it contains are (1) that the Registrar of Friendly Societies shall be satisfied that the principal objects of a union are the "statutory objects," *i.e.*, the objects defined by the Trade Unions Amendment Act, 1876, the regulation of the relations between workmen and masters, etc., and that the unions are not purely political societies; (2) that the political objects must be approved by a majority of the members voting on a ballot; (3) that payments for political objects shall be made from a separate fund; (4) that members shall be at liberty to give notice that they do not desire to contribute to the political fund.

This is a brief summary of the measure which has been rejected by the Congress as "infringing the principles of self-government and restricting their political liberty"; in other words, the Congress resents the rights of minorities being in any way regarded. It is refreshing to find Mr. Havelock Wilson, in what he termed "a little plain talk to the Congress," arguing against the course adopted by Congress on the same lines that we have often urged in these pages. He said, "They asked a man to join a trade union for trade union purposes, then after they got him into their membership they smuggled a resolution through, and said, 'We are going to charge you one shilling a year, and if you do not pay it we will prevent you from following your occupation.' That was the cause of the trouble—they were trying to compel men to pay the levy whether they liked it or not."

This exactly sums up the case, and, as Mr. Havelock Wilson observed, there is no enthusiasm over the matter. We may add our own opinion that the Bill goes a great deal too far as it is, and the unions are in danger of losing their true character of trade societies, provident societies, and Insurance Act societies, and being converted into political societies.

The attitude of the Congress towards arbitration in trade disputes is somewhat difficult to analyse. A resolution moved by Mr. Tillett that an instruction be given to the Parliamentary Committee to prepare a report and recommendation as to the basis of arbitration and conciliation was defeated by a large majority, but owing to some allusion in the first part of the resolution to compulsory arbitration the impression seems to have prevailed that the motion advocated compulsory arbitration. The vote to leave out this part of the resolution was lost, and thus the final vote seems to have been given upon the proposition of compulsory arbitration. Mr. Havelock Wilson, who has always opposed compulsory arbitration, said that since his visit to New Zealand and Australia he had changed his opinion, and was now in favour of the application of the system there in force to disputes in this country.

In the course of the debate Mr. John Ward dissociated himself from Mr. Crooks' Bill on this subject, the provisions of which we explained in the *Builder*, September 8, 1911. On the subject of the Insurance Act the President expressed himself in favour of a universal and non-contributory scheme, but the main debate turned on the question of insurance companies becoming approved societies. The trade unions see in this a risk of their members not joining the unions as approved societies, and they accuse the employers of favouring societies other than trade unions. A motion protesting against the alleged practice was carried unanimously. It is certainly essential that good solvent societies should be open to the classes who come under the Insurance Act, and it may be a question whether the State which enforces insurance should not also control and guarantee the societies. The trade unions as provident societies have been allowed to qualify as approved societies, but if their constitution was to be changed as the Congress have voted should be the case, and if they became political societies, they would hardly seem suitable organisations for carrying out the purely non-political functions imposed upon them by the Insurance Act.

A resolution relating to the position of casual labourers under the Act was carried unanimously. The resolution was to the effect that exemption should be given to men earning not more than 10s. a week, but that yet they should be entitled to the benefits. We express no opinion upon the remedy, but we do believe that the Act is bearing heavily on those casually employed, and that to obtain employment they are often compelled to produce cards stamped by themselves.

The above observations on the proceedings do not purport to afford a chronicle of the whole proceedings, and, whatever criticism may be passed upon certain utterances of some of the speakers, we think it must be conceded that this Congress was marked by a more practical tone and marked a higher level of debate than many of its predecessors.

In these times of industrial unrest the Congress, however, had a great opportunity for putting forward practical suggestions for securing better relations between labour and capital, and it cannot be said that the most was by any means made of this opportunity; but the multitude of questions put forward at this annual meeting does not permit of concentrated debate on any particular subject.

INTERCEPTING TRAPS.

THE Departmental Committee on Intercepting Traps in House Drains, into which was converted the Committee of General Inquiry, originally appointed by the President of the Local Government Board in October, 1908, has issued its Report.

The document is one that contains a good deal of interest for sanitarians, and may result in some modification of the practice which has been followed by the Local Government Board for more than thirty years in dealing with new sets of by-laws submitted to them for approval.

The Committee's investigation nominally originated in a proposal by the Willesden Urban District Council to adopt a series of by-laws in which the requirement as to the provision of an intercepting trap was to be omitted. The district referred to is one that includes areas in which the ventilation of sewers is a matter of difficulty, and the cheapest course for the local authority would, of course, be to utilise the private drains and ventilating pipes of the houses. The Local Government Board refused to assent to the proposal of the Willesden Council, but at the same time promised a general inquiry into the question raised.

The result of this inquiry, in the course of which fifty-two witnesses were examined and experiments were made and observations taken in Bristol as well as in some twenty suburban districts, is now before us.

The disadvantages alleged by the opponents of the trap are:—

1. That it checks the passage of air from the sewer through the house drains and the ventilating shafts attached thereto.

2. That it involves separate ventilation of the house drains, which, in turn, necessitates the provision of a fresh-air inlet, which often acts as an outlet for foul air and so becomes a nuisance.

3. That it complicates the construction and enhances the cost of house drains.

4. That it is an impediment to the passage of sewage and often causes the blockage of the drain.

The advantages claimed by its advocates are:—

1. That it prevents the passage of air from the sewer into the house drain, and thus prevents the entry of sewer air into the dwelling.

2. That it acts as a barrier to rats.

The Committee's investigations were directed first to the determination of the actual physical facts connected with the use of the trap and then to the consideration of the chemical, bacteriological, and other conditions involved.

The physical results may be briefly stated thus:—In the first place "it seems to be established (says the Report) that the trap does serve as an effectual barrier to the entry of sewer air into the house drain, which is the fundamental advantage claimed for it." Secondly, it does not prevent the passage of rats. Thirdly, it does not involve "ventilation" in the sense of a current of air through the pipes, but only necessitates, apart from anti-siphonage pipes, an opening at the top of each soil pipe. That is to say the objectionable "fresh-air inlet" may be omitted altogether. Fourthly, it is true that the trap is liable to "retain a considerable proportion . . . . of the solid matters of the sewage passing through it . . . . and thus to favour blocking of the trap as well as putrefaction of the sewage before it reaches the sewer." In this last fact the Committee appear to detect the chief objection to the trap. They state that "micro-organisms of sewage origin are very rarely present in sewer air. On the other hand, they may be present in drain air in large numbers. This difference is the result of the splashing of sewage which occurs in drains, and which does not usually occur in sewers." It is, therefore, inferred that "the entry of sewer air into a house is of correspondingly smaller importance, *bacterially*, than the entry of drain air." (The italics are ours.) There are, of course, other considerations than those based upon bacteriological or epidemiological grounds, as the Committee point out, and the question of the harmfulness or otherwise of sewer air, especially in dwelling-houses, is one upon which the evidence before the Committee appears to have been quite inconclusive. A medical witness was "very suspicious of the theory" that sewer air, *apart from its smell*, can be a predisposing cause of disease, and the generally good health of sewermen is pointed to as proof of its harmlessness.

The chemical evidence shows that the most frequent characteristic of sewer air is the presence of smell. "This smell is due to the presence of certain volatile substances, given off from sewage, in such minute quantities as to be harmless in themselves, apart from smell, or possibly to effluvia from moulds which may be attached to the walls of sewers." We must own to feeling that this statement is neither so lucid as the rest of the Report nor so convincing as to form a satisfactory basis for any relaxation of efforts to exclude sewer air from our homes. And the Committee quite realise that even "smell" cannot be wisely ignored, for they remind us, with a touch of humour, "that it is possible, through the sense of smell, to induce distinct modifications in physiological processes."

A further note of caution is also sounded in the statement that "there is no doubt a considerable body of medical opinion which retains the view that certain diseases, notably typhoid fever, diphtheria, quinsy and sore throat, and certain 'septic' diseases are fostered or are even actually produced by exposure to sewer air or drain air."

To return to the question which was the immediate cause of the Committee's existence—the desirability or otherwise of the ventilation of sewers through house drains—two outstanding conclusions are arrived at, one being that the importance of the effect which the presence of the intercepting trap has on the ventilation of sewers, on which much stress has been laid, has probably been exaggerated, and the other that "too much importance has been attached to the question of sewer ventilation," there being "a considerable amount of evidence which indicates that the necessity for ventilation of sewers has been exaggerated." "If," say the Committee, "the objection to the intercepting trap rested solely or mainly on its interference with sewer ventilation, we should be inclined to question the importance of such an objection."

In Leeds, in East Grinstead, and in many German towns no intercepting traps are used, and in Bristol many houses have no traps, and there is an entire absence of designed sewer ventilation. No exceptional mortality appears to result. There are, however, exceptional cases in which "the ventilating shafts of house drains directly connected with the sewer have proved a nuisance, to abate which it has been necessary to insert intercepting traps."

It would appear that still further investigations are desirable, and that in the meantime it will be consonant with the dictates of caution to close up the "fresh-air inlets" on our house drains and to retain the disconnecting trap.

L.C.C. SCHOOL OF BUILDING.

THE Evening School of Building, Ferndale-road, Brixton, organised by the London County Council, will open for the tenth session on the 23rd inst. Mr. H. W. Richards is the Principal, and his assistant is Mr. Arthur R. Sage. Professor Beresford Pite, F.R.I.B.A., is the Director of Architecture.

The Evening School has been established to enable artisans and others engaged in the building trades and allied professions to acquire an intimate knowledge of the principles that underlie the processes which they have to carry out in their daily work. Workshops have been provided and equipped for the practical teaching of the several building trades under conditions similar to those met with on buildings and in builders' shops.

The prospectus divides the work of the School into five parts, viz., Section 1—Trade Subjects (Workshop Practice and Theory); Section 2—Lectures and Classes in Building Construction and Allied Subjects; Section 3—Surveying; Section 4—Structural Engineering; Section 5—Architecture and Drawing.

In the practical trade classes admission will be given to those engaged in the trade only. These classes are intended to supplement workshop practice and not to teach trades. Students in these classes are expected to attend the lectures and drawing office work in connexion therewith, and those who fail to do so will not be allowed to continue the workshop practice.

The Advisory Sub-Committee consists of Mr. J. S. Holliday (Chairman), Messrs. W. J. Carpenter, W. Davis, W. Elliott, R. F. Gilling, T. A. Hards, F. Higgs, G. H. Manser, H. D. Searles-Wood, F.R.I.B.A., and G. Stagg.

In the various classes the Principal is supported by a numerous and efficient staff.

A School of Architecture, with courses of instruction in the history of buildings and for the study of architectural design and planning, together with the preparation of architectural drawings, has been added as part of the complete scheme of the work of the School. The work of several classes will be under the general superintendence of Mr. J. B. Fulton, A.R.I.B.A., assisted by Mr. H. F. Murrell, A.R.I.B.A. Mr. G. Denham, A.R.C.A., will give instruction on architectural perspective and lettering. Lectures upon examples and criticisms of the students' work will be given during the session by Professor Beresford Pite, F.R.I.B.A.

Day Technical Schools for Boys, Junior and Senior, will be open on five days in the week to provide a sound scientific and technical training for those preparing to enter the building trades and allied vocations.

Full particulars of all classes will be sent on application to the Principal, the School of Building, Ferndale-road, Brixton, S.W.

HARDWARE EXHIBITION, OLYMPIA.

THE Hardware, Ironmongery, and Domestic Appliances Exhibition, with which is allied an Exhibition of Oil Engineering, is open at Olympia until the 17th inst., and many interesting features are on view. Among heating appliances may be seen anthracite kitcheners and stoves by the London Warming and Ventilating Company, Ltd., who give cooking demonstrations daily (Stands 180 and 194), and the various productions of the Interoven Stove Company, Ltd. (Stand 196). Messrs. C. A. Peters, Ltd. (Stands 135 and 150) show the Carbotron portable stoves for heating motor-houses and various household specialities; Messrs. Helliwells, Ltd. (Stand 182), exhibit firegrates and mantelpieces; and The Petroleum Solid Fuel (Parent) Company, Ltd. (Stands 15 and 26), show the various "Petsol" briquettes, firelighters, and other novelties.

The British Vacuum Cleaner Company, Ltd. (Stands 93 and 108), have in operation a full range of hand and power vacuum cleaners, and The Electric Appliances Company, Ltd., with their portable vacuum cleaner, are at Stands 114 and 127.

The possibilities of lighting by acetylene gas are brought forward by the Thorn & Hoddle Acetylene Company, Ltd. (Stand 208); the Acetylene Corporation, Ltd. (Stand 205); the Leading Light Syndicate, Ltd. (Stand 7); the Dennis Acetylene Illuminating Company (Stand 8); and by the Acetylene Publicity, Ltd. (Stand 8a).

Oil engines and similar appliances are shown by the Westinghouse Brake Company, Ltd. (Stand 4), by the India Rubber, Gutta Percha, and Telegraph Works Company, Ltd., and by the Crossley Gas Engine Company (Stands 60 and 61). Messrs Tangyes, Ltd. (Stands 95 and 106), are represented by various well-known engineering inventions.

Among other exhibits to be mentioned are the models of a pump rig, derrick, and engine-house, with plans, and other features, shown by Mr. George W. Mancell (Stands 55 and 66); the chemical fire extinguishers and other fire appliances of the Harden Star-Lewis and Sinclair Company (Stands 17 and 24); the sash-lines, blind and other cords of Messrs. J. Austin & Sons, Ltd. (Stands 13 and 28); the "Kaye" oil cans, fillers, oil pumps and lamps made by Messrs. Joseph Kaye & Sons, Ltd. (Stands 39 and 42); the "Climax" carpenters' cramps of Messrs. Crampton Brothers; the brass and iron fire guards and other wirework devices of the Holborn Wire and Cage Works (Stands 92 and 109); and the enamelled ware of Messrs. Oscar Molnich & Co., Ltd. (Stands 139 and 149).

GENERAL BUILDING NEWS.

CHURCH EXTENSION, BIRKENHEAD.

The foundation-stone was laid last week of the Lady Chapel of St. Matthew's Church by the Mayor of Birkenhead. The scheme comprises clergy and choir vestries, lady chapel, south aisle, and ambulatory, and when completed the seating accommodation of the building will be for 514 people. The architects are Messrs. Nagington & Shennan, of London and Liverpool.

SCHOOL, KILBIRNIE.

A new school is to be built between Kilbirnie and Glengarnock from the plans of Messrs. H. & D. Barclay, architects, Glasgow, to accommodate 400 children.

PUBLIC SCHOOL, GLASGOW.

A new public school has been erected in Carmichael-place, Langside, at a cost of about 17,000*l*. The building is two stories high and has a frontage of about 170 ft. and a depth at the wings of 120 ft. The architect for the work was Mr. Ninian Macwhannell.

INFANTS' SCHOOL, MERTHYR.

This new school has been erected at a cost of about 4,615*l*., from the designs of Mr. F. Thackeray, the Borough Architect, and the building will provide accommodation for 250 children. The contractors were Messrs. Enoch Williams & Sons, of Dowlais.

SECONDARY SCHOOL, GIRVAN.

The new secondary school for Girvan and district, erected by the Girvan School Board at a cost of 7,000*l*., according to competitive plans by Mr. Wm. Cowie, architect, Ayr, was opened on the 2nd inst. The building is planned with a central hall on each floor, giving direct access to the classrooms, the upper hall leaving an open gallery on one side, with high mullioned windows connecting the two stories. There are separate entrances for boys and girls, and separate entrances at each end of the hall, with cloakrooms, etc. There are nine ordinary classrooms for thirty pupils each. On the upper floor there are a science-room, art-room, cookery and laundry room, and gymnasium, while a portion of the old school has been converted into a work-room for twenty boys. The principal façade is in a free treatment of Renaissance in red sandstone, while the elevations are of brick and rough-cast, with stone dressings.

KIRKCONNEL NEW SCHOOL.

At a meeting of Kirkconnel School Board it was agreed to accept the plan by Mr. Crombie, architect, Dumfries, for the erection of a new school at an estimated cost of 3,100*l*. The school will consist of four rooms and a corridor, with the customary outside offices.

NEW SCHOOL AT LLANGAN.

New Llangan Schools have just been opened. Accommodation is provided for 122 children. The school is built of local stone, and the exterior is part rough-casted, together with the Welsh slates. The building was designed by Mr. D. Pugh Jones and built by Messrs. Vickery Bros., Barry Dock.

COUNCIL SCHOOL, STRATFORD.

The Senior Department of the London-road Council School has been erected from the designs of Mr. A. S. R. Ley, Lic.R.I.B.A., at a cost of about 4,915*l*., and the building provides accommodation for 376 children in eight classrooms. The building has been planned in order to allow of future additions, when it is expected to increase the accommodation to 636 children. The builder was Mr. George Brown, of Grays, and the clerk of works was Mr. T. J. Doy.

SCHOOLS, HARROGATE.

The new schools for girls, Queen Ethelburga's School, at Killinghall Moor, Harrogate, are, says the *Yorkshire Herald*, the result of a limited competition, in which six architects were invited to submit designs, and that of Mr. W. Gillbee Scott, F.R.I.B.A., was selected. He is the architect of the whole of the buildings, with the exception of the chapel, which was erected from the designs of the late Mr. C. Hodgson-Fowler, F.R.I.B.A., of Durham. The scheme comprises the school block, head mistress's house, four large boarding-houses, a sanatorium, lodge, and chapel. Of these, the whole have been erected with the exception of two of the boarding-houses and the sanatorium, which will be added as soon as the school fills up. The school block provides accommodation for 150 girls. The floors and staircases are of fireproof construction. The classrooms are grouped together for the lower, middle, and upper schools. The floors are of pitch-pine blocks, and the walls have panelled dadoes. The large science-rooms are provided with preparation, balance, and store rooms adjoining. There are also two fine rooms for the teaching of elementary and advanced art, each having large north windows. The assembly hall is in the centre of the building, opposite to the principal entrance. It is 60 ft. by 34 ft., and is provided with a gallery at one end. The vaulted entrance hall with its recessed alcoves forms an interesting feature between the front vestibule and the assembly hall, and provides crush-room space just where it is required. The gymnasium is upon the lower ground floor, and is 55 ft. by 25 ft., and 20 ft. high. It has a gallery for spectators at one end. A large number of rooms for the teaching and practice of music are provided. These are placed in a separate building, which is only connected with the main block by a corridor. The partitions and ceilings of all rooms are formed of a combination of plaster and slag wool, with hollow spaces between, and all the doors are double. Private rooms for the headmistress and assistant mistresses are provided, and also other rooms for various purposes. Rooms for the teaching and practice of domestic economy are also provided. A covered playground is provided immediately adjoining the school block, and also stores for games, bicycles, etc. The house for the headmistress forms a wing to the school block, and contains accommodation for some of the assistant mistresses in addition. An open covered corridor, 10 ft. wide, connects the school block with the chapel and with each boarding-house. Each boarding-house is an entirely detached building, forming a complete home in itself, and contains accommodation for thirty-eight girls and for five assistant mistresses. Each girl has a separate cubicle, except that, in a few instances, rooms are arranged for sisters. There is a lounge hall for common use, and a play-room and a preparation-room. Six small studies are provided for the elder girls. There are twelve bathrooms in each house, the walls of which are tiled. The floors are of fireproof construction, and ample means of escape in case of fire are provided. There are three staircases in each boarding-house, two of them being fireproof. All the floors are laid with pitch-pine blocks. The houses and the school block are heated throughout with hot-water pipes and radiators, but all sitting-rooms and the lounge hall have fireplaces as well. The buildings are faced with red brick, and the ornamental portions are of Pateley Bridge stone. The roofs are covered with green Westmorland slates. The style is Georgian, quietly treated. The contractors for the whole of the works, excepting the chapel, are Messrs. Harold Arnold & Son, of Rugby, and the clerk of works is Mr. E. Bilby. The cost of the complete scheme is estimated at about 65,000*l.*

TRADE NEWS.

Lee's "All Time" sheet-lead and asphalt damp course has been specified and extensively used on the new Southmead Infirmary near Bristol.

Messrs. Spalding & Myers, of 36-37, King-street, E.C., are the architects for new printing works now being erected in Emerald-street, Theobald's-road, by Messrs. E. A. Roome & Co., 36, Basinghall-street, E.C.

Under the direction of Mr. R. T. Longden, Lic.R.I.A.B., Stoke-on-Trent, the "Boyle" system of ventilation (natural), embracing Boyle's latest patent "Air Pump" Ventilators and Air Inlets, has been applied to Rudyard Chapel, Rudyard, Staffs.

Messrs. Patman & Fotheringham, Ltd., 100 and 102, Theobald's-road, London, W.C., also of Park-street, Islington, N., have secured the following contracts:—Extension to Mayfair Works, Miles-street, South Lambeth-road, for Messrs. Brand & Sons; taking down and rebuilding front and other alterations at No. 70, Fleet-street, E.C., for Messrs. Sweetings, Ltd.; new works and garage, etc., for the National Steam Car Company, Nunhead-lane, Peckham, S.E.

The Church National Schools, Beccles, are being supplied with Shorland's Warm-Air Ventilating Patent Manchester Grates by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

PIECE AND TIMEWORKERS' HEALTH INSURANCE CALCULATOR.

A USEFUL calculator, the first of a new series being brought out by Messrs. Gall & Inglis under the title of the "Flash" Reckoners, is a "Health Insurance Calculator." The necessity for such a calculator has no doubt been felt already, for while in many cases the ascertaining of the rate of remuneration for the purposes of the Insurance Act is fairly simple, when through short time or a broken week's work employees' earnings verge upon the differential rates of insurance, it is not always easy to find out quickly the exact amount allowed by the Act. The Health Insurance Calculator has therefore been devised so that by the movement of the finger the exact amount of insurance is quickly ascertained. The working of the calculator is very simple, for by the movement of two slides the separate calculations involved are brought together, and a finger points to the workers' and employers' rate of contribution. The calculator can be obtained at No. 31, Henrietta-street, Strand, W.C., price 2*s.* net.

PROJECTED NEW BUILDINGS IN THE PROVINCES.*

ABERDEEN.—Extensions to factory of Messrs. John Mellis & Son (2,500*l.*); Mr. G. Bennett Mitchell, architect, 148, Union-street, Aberdeen.

Arbroath.—Extensions to factory (4,500*l.*) for Messrs. F. Webster & Sons, sailcloth manufacturers.

Askern.—Cinematograph theatre, Moss-road, for the Yorkshire Picturedrome Company; Messrs. B. D. Fairbank & Son, architects, Craven Bank chambers, 1, Bank-street, Bradford; Mr. W. Waterton, architect, Askern.

Baschurch.—Bacon factory; Mr. G. Griffiths, Baschurch.

Blackwood.—Electric theatre and twelve houses, Montehave-avenue, for the Montehave Building Syndicate, No. 1.

Brentham.—Twenty-four flats, Garden Suburb Estates, for the Ealing Co-partnership Tenants Association, Ltd.

Bristol.—Factory; Mr. W. F. Bird, architect, The Island, Midsomer Norton.

Buckfastleigh.—Proposed workmen's dwellings; Mr. Andrew Warring, Surveyor, U.D.C. Offices, Buckfastleigh.

Catshill.—Schools; Mr. A. Vernon Rowe, architect, 30, Foregate-street, Worcester.

Cawood (near Selby).—Reconstruction of old Wesleyan Methodist Chapel (1,000*l.*) for the Trustees.

Doncaster.—Premises, Balby-road, for Messrs. W. Firth, Ltd., iron and steel merchants, Leeds; Mr. T. H. Johnson, architect, 6, Priory-place, Doncaster.

Dublin.—Proposed housing scheme (11,464*l.*); Mr. C. J. McCarthy, Architect, Town Hall, Dublin.

Dudley.—Public convenience, The Square, Holly Hall; Mr. J. Gammage, Surveyor, Town Hall, Dudley. The following plans have been passed:—Additions to church, Church-road, Netherton, and extensions Sunday school, Tinchbourne-street, for the Trustees of the Wesleyan Church; additions to Holloway-chambers, Priory-street, for the Midland Counties Mutual Benefit Society; picture hall, Cinder Bank, Netherton, for Mr. W. Williams.

Exeter.—Children's home (3,000*l.*); Mr. R. M. Challice, architect, Bedford-row, Exeter.

Fowey.—Hospital (2,000*l.*); Mr. Parkes Lees, Llanteglos-by-Fowey.

Glasgow.—Alterations to buildings, Buchanan-street, Royal Bank-place, Royal Exchange-square, and South Exchange-place, for the Royal Bank of Scotland.

Heywood.—Offices at Hooley Bridge Mills; Messrs. Lowther & Rigby, 22, Market-street, Manchester.

High Wycombe.—School; Mr. T. Thurlow, architect, 25, High-street, High Wycombe; Messrs. Gibson & Son, builders, Paul's-row, High Wycombe.

Horcombe Chudleigh (Devon).—Residence, etc.; Mr. J. A. Lucas, architect, Guildhall-chambers, High-street, Exeter; Messrs. Woodman & Son, builders, Bartholomew-street East, Exeter.

Hove.—A plan has been lodged for a proposed church in Portland-road by Mr. B. H. Dixon, also for alterations to Nos. 92-102, Montgomery-street, for Mr. J. W. Hayler.

Kilbirnie (Glasgow).—School (4,500*l.*); Messrs. H. & D. Barclay, architects, 245, West Vincent-street, Glasgow.

Kilmarnock.—Warehouse, Strand and Croft-streets (5,000*l.*) for Messrs. John Walker & Sons, Ltd., distillers. Alterations to buildings, Bonnyton-road (750*l.*) for the Ayrshire Coal Owners' Association. Wool store, Lawson-street (660*l.*) for Messrs. Douglas, Reyburn, & Co., spinners.

Masham (Yorks).—Town and assembly halls (3,000*l.*); Mr. J. Houfe, architect, Albert-chambers, Harrogate.

Moira.—Mission church; Messrs. Orton & Sons, builders, Kilwardby-street, Ashby-de-la-Zouch.

Motherwell.—Presbyterian church (5,000*l.*) on site of present building for the Trustees.

Nelson.—Proposed housing scheme; Mr. B. Ball, Surveyor, Town Hall, Nelson.

Newcastle-on-Tyne.—School, St. George's-road (1,000 places); Mr. A. C. Coffin, Town Hall, Newcastle.

Oakenshaw.—Additions to Oak Mills for Messrs. E. W. Lister & Co., yarn spinners.

Oxford.—Shops, Magdalen-street; Mr. J. H. Blatherwick, architect, City-chambers, South Parade, Nottingham.

Penzance.—School; Mr. T. H. Cornish, Town Hall, Penzance.

Portree.—School; Mr. R. J. McBeth, architect, 33, Academy-street, Inverness.

Redhill.—Residence; Mr. J. A. Souttar, architect, 52, Bishopsgate, E.C.

Rochdale.—School, King's-road, Lowerplace; Mr. E. J. Holden, Town Hall, Rochdale.

Rochester.—Additions to King's School; Mr. E. Farley Cobb, architect, 43, High-street, Rochester; Messrs. West Bros., builders, High-street, Rochester.

Spalding.—Drill hall; Messrs. Scorer & Gamble, architects, Bank-street-chambers, Lincoln.

Staighton (Guildford).—Alterations to Royal Hotel for the Farnham United Breweries, Ltd., West-street, Farnham.

Stretford.—Plans have been passed as follows:—Addition to works, Trafford Park, for the Rubber Regenerating Company, Ltd.; vicarage, Northumberland-road, for the Trustees of St. Hilda's Church; bakehouse, Empress-street, for Mr. Jas. Fryer; extensions to organ works for Messrs. Brett, Hamilton, & Tarbolton; picture hall, Malvern-street, for Messrs. Newall & Gibbons; three shops, Chester-road, for Mr. J. L. Doniger; bakehouse, Moss-road, for Mr. Joseph McPetrie. A plan has been lodged for alterations to King's Hall by Mr. W. H. Cadman.

Throston.—School; Mr. H. C. Crummack, Surveyor, Town Hall, Hartlepool.

Tintagel.—School; Mr. B. C. Andrew, architect, Biddicks-court, St. Austell.

Todmorden.—Conversion of Fielden Hotel into club (1,000*l.*); Secretary, Conservative Club, Todmorden.

Underhill.—School; Architect, County Hall, Dorchester.

Yorks (W.R.).—Schools, Horsforth and Brierley; Mr. J. Stewart, Architect, Shire Hall, Wakefield.

* See also our list of Competitions, Contracts, etc., on another page.

BUILDING TRADE WORKERS.

A meeting was held on the 8th inst. of building trade workers at the Kingsley Hall, Bristol, when addresses were given on "One Union for Building Trade Workers," the Chairman being Mr. T. C. Lewis, Secretary of the Trades Council. A resolution was moved endorsing the principle of consolidation in existing organisations, recognising the good work done by sectional unions, and expressing the opinion that the workers must organise on the basis of industry. The resolution, after being seconded, was put to the meeting and carried.

A NEW SHOWROOM FOR HEATING APPARATUS.

Messrs. Hartley & Sugden, Ltd., of Halifax, have opened showrooms and offices at 61, Great Portland-street, W., and will be glad to meet at that address all those who are interested in the problems of heating. The firm provide the means for heating hospitals and other institutions, churches, business premises, hotels, and houses of all sizes, with the various accessories to the plant. They are prepared to demonstrate the advantages of independent boilers for supplying hot water in every sort of building, even where the household requirements are not large. It is contended that the range boiler is not the most economical means of heating water for bath and other purposes, the supposed "waste heat" from the fire being in reality an expensive product. The range boiler is heated by coal, while the independent boiler is heated by coke, cinders, and any combustible household *débris*. The kitchen fire can be reserved, therefore, for its legitimate purpose of cooking, without the necessity of diverting the heat from the ovens sometimes when it is least convenient.

Design for Stencil Frieze. By Mr. T. A. Godfrey.

DESIGN FOR STENCIL FRIEZE.

Characters from Shakespeare's "As You Like It."

THIS design for a stencil frieze is to be placed in the hall of the London County Council's special school situated in the Old Kent-road. A subject has been selected that would be most likely to appeal to children and at the same time one that would be of some educational value. Three colours are to be used in the stencilling, and the room is being painted to harmonise with and help the colours selected for the frieze. It was first thought to make this design a repeat, but on further consideration it was concluded that it would not be quite good taste to have a repeat of definite characters and those characters engaged in definite action. The result is the scheme is to be enlarged, and designs are being made taking other comedies of Shakespeare's for *motif*. A large proportion of the space will be given to "Midsummer Night's Dream." A number of stencils will thus be in hand that can be placed upon other walls in other schools. Under each character will be stencilled the name.

NEW TOWER, ST. VINCENT'S CHURCH, SHEFFIELD.

THE tower of this church, shown in our illustration (p. 314), has been completed at the cost of a benefactor of the parish, the opening ceremony being performed on October 29 last, in the presence of his Eminence Cardinal Logue.

The church, which is situated in the slum quarter of Sheffield, stands on the summit of rising ground, and the position of the tower, as seen from distant parts of the city, is a very commanding one.

It was originally opened in 1856, and the south aisle was added in 1898. The lower part of the tower was built in 1870. Its dimensions are, width, 22 ft. square at belfry level, and height from ground to top of parapet 93 ft. The architects of the whole of the works described have been the late Mr. M. E. Hadfield and Messrs. C. & C. M. Hadfield. The contractors for the recently-finished tower were Messrs. D. O'Neill & Sons.

INFLUENCE AND ETHICS OF COMPETITIONS.

THE following is taken from a paper, prepared by Mr. Donn Barber, and printed in the *Proceedings* of the forty-fifth annual Convention of the American Institute of Architects.* The paper, of course, deals with the competition system in the States, but the views of the author will be of interest here:—

"It must be admitted that the subject of competitions considered in any of its aspects has become a most vexatious problem, and one which, in all probability, will never be solved to the complete satisfaction of the building public or the practising architect. Competitions in one form or other are as old as the practice of architecture itself, and history teaches us that the resulting heartburning and disappointments, the strife and argument, the petty jealousies, the every important doubt as to whether, after all, the best man and the best plan have really won, obtained just as much in the competition for St. Peter's at Rome as it has perhaps in our lesser competitions for a post office of negligible importance.

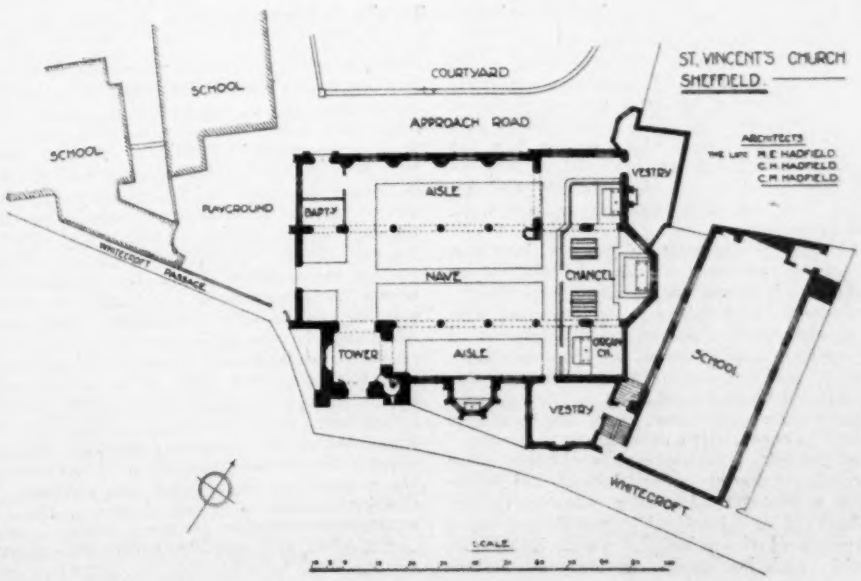
It would be improper and unfair, indeed, to condemn competitions as a whole and indiscriminately, for from some points of view they seem to be a necessary evil. We can, I think, admit that competitions in themselves are not necessarily evil. It is the continual abuse and mismanagement of competitions, the unbusinesslike, undignified, inadvised desperate sort of struggles that ever carries in their train disappointment, prejudice, criticism, and hard feelings of many and varied kinds, that is responsible for a condition that has become a most serious consideration in contemplation of the interrelation of architects and bearing upon the actual work that we as a profession are doing and standing for. The architectural profession has for years been kept in a state of commotion and hot water while the real solution of the difficulty seems as yet unfound.

It seems to have become a very generally accepted and recognised tradition in certain cases, notably where proposed structures of a public or semi-public nature are involved, that architectural competitons still prove to be desirable or necessary as furnishing perhaps the best available means for selecting an architect.

Just at the present time in this country, however, architectural competitions seem to be declining somewhat in popularity. Where only a comparatively few years ago competitions were sufficiently numerous to provide almost continuous employment for some firms who were fortunate enough to acquire the major part of their work in that manner, to-day we find an immense quantity of important work being given out by direct selection and appointment to architects, and competitions comparatively infrequent. It would be difficult to assign any real reason for the change which seems just now to be taking place. Can it be that the owner is gradually coming to see that competitions are at best very slow, and if properly conducted a most expensive method of choosing an architect; is it possible that the owner realises that an occasional good preliminary scheme is, after all, the real limit of the competition method, and, that being the case, competitions are in the main of no advantage to him? Does the owner begin to appreciate the extreme difficulty of devising a scheme of competition that will afford him conclusive assurance and evidence of the winner's ability to secure for him the final and practical execution of the design selected. without committing him to unnecessary if not inordinate expense.

Notable instances exist where architects who have proven adepts in the preparation of competitive designs, men of extraordinarily developed imagination and possessing marvellous dexterity in draughtsmanship, have been awarded the prize and later the work, as a result of competition, and have during the prosecution of the work shown themselves to be devoid of practical experience, and even lacking in the ability to discriminate in the selection of competent assistants or superintendents. The ultimate results in such cases have very probably had the very natural effect of somewhat impairing confidence in the competition method of selecting an architect. It is only fair to say, on the other hand, that there also exist many instances where notably satisfactory results have been obtained through the method of competition; but have these not ordinarily followed as a result of choosing the competitors from the ranks of competent and thoroughly experienced practitioners, and paying the competitors so selected an adequate or reasonable sum for their sketches? Exceptions to this latter rule might be noted in the cases of Government or municipal work, and perhaps possibly in some private work of sufficient size and importance to induce the experienced architect to enter an unpaid contest; but even in such circumstances the competitors have usually been limited in number and carefully selected.

It must of necessity be prejudicial to the interests of the owner that any architect should be allowed to enter a competition who cannot in advance establish his ability and competence to properly design and satisfactorily execute the work involved if entrusted to him. It is sometimes urged that to open an unlimited competition may disclose some unknown



*Published by the Board of Directors of the American Institute of Architects. Mr. Glenn Brown, editor.

St. Vincent's Church, Sheffield.

Messrs. C. & C. M. Hadfield, Architects.

but brilliant designer. This reasoning might be valid if the sole object of a competition were to secure a brilliant set of sketches. But unfortunately sketches in themselves give no real evidence that their author has the technical knowledge or matured ability to fulfil the promise of his sketches through proper and adequate control of the work itself in execution.

The general influence of competitions can for present purposes be broadly divided as regards the influence on the architect. Theory presupposes competitions to be instituted with the sole purpose of advancing the interest of the owner, and practice proves that these interests are best served where a fair, clean-cut and equitable agreement has been entered into between the owner and the architect before the competition takes place.

The American Institute of Architects, after years of untiring study and labour, has finally issued a circular of advice relative to the conduct of architectural competitions as a statement of the principles which it believes should underlie such agreements. Serious difficulty with the system prescribed, however, has been found in some cases where it has proven inexpedient, not to say impossible, to carry on important competitions along the lines of what is conceded and believed to be the best practice, owing to the general and natural desire on the part of the owner to get free advice in the form of the greatest possible number of competition sketches, and also on account of the surprising willingness on the part of the architect to rush into competitions where no prearranged agreement or understanding exists with the owner. The owner often regards what he believes to be the information contained and given in his particular competition in the light of a consensus of expert opinion on the subject of the problem before him, and therefore is pleased or disappointed, as the case may be, with what he regards to be the possibilities of his project. On account of the quality and character of the information so given, however, the real satisfactory solution of the problem is often complicated, and confusion rather than lucidity results. We have all seen the results of what have been termed "unregulated scrambles" and how many times this inconsistent, unbusinesslike, undignified, and certainly inartistic mode of procedure has carried with it its own disappointments, prejudices, and sins.

Why an owner, even when he has taste and judgment, and is, besides, a good business man possessing ordinarily sound common sense, continues to persist in this method of obtaining a design for a building is a question which we architects must answer. It is certainly a most discouraging situation, looking at it entirely unselfishly and from a directly professional standpoint.

The shortsighted, unbusinesslike practice of the seeking out of a client and the offering to him of preliminary services on approval and gratuitously, whether in competition or in the hope of finally being awarded the work, has to a great degree in the past lowered the dignity of the profession as a whole and resulted in the cheapening of the architect's services in the mind of the building public. The average owner seems to attach no particular value to architects' sketches either as meaning or standing for more than he himself can see in them, or as representing anything like the cost and labour involved in their production.

Architects are not paid enough for the work they actually do to be able to afford to waste their earnings on the whims and fancies of an owner who is willing to take, without compensation from them in one form or another, professional advice which may be the result of years of technical preparation and experience. The public should be made to feel that he who bears the title of architect has the knowledge and ability needed for the proper invention, illustration, and supervision of all building operations which may be entrusted to him, and that his services when desired or sought are entitled to commensurate remuneration. An architect should have a better standing in the community; he should be more prominent before the public and its public enterprises, in the courts, and in all matters of good and helpful citizenship. To just how much of the lack of all this can we trace the influence and practice of unlimited and irregular competitions obtaining throughout the past is a question well worth considering.

The influence of competitions on the architect, aside from the undoubted educational advantage which they have furnished at unjustifiable and exorbitant expense to the profession, has been to create unreasonable jealousy and unfair prejudice, misunderstandings, disappointments, and in many cases undeserved criticism. It must be remembered in competitions that the resulting joy, if there is any, is of necessity confined to the winner, while the burden of disappointment is left to be shared by all the others who have through labour and expense competed. It has been proven over and over again, as an economic argument in the case of competitions for smaller buildings, that the unsuccessful competitors have often expended collectively in the cost of preparing competitive designs, a sum equal to, if not exceeding, the gross fee that the successful architect has finally received for his complete services rendered in connexion with the execution of the work involved. This is, of course, a serious situation for the profession, and one which thus far has not been properly met or handled. It cannot be justified either as a good public policy or a sound professional policy. The query is, How long can the profession be expected to afford to keep it up?

The ethics of competitions would seem to be inseparable from the ethics obtaining in the general practice of architecture. The written circular of advice relative to the principles of professional practice, the canons of ethics, and the conduct of competitions as prepared and circulated by the American Institute of Architects form a very complete and helpful basis for the avoidance of the usual pitfalls and temptations due to an over anxiety to get work at any cost.

The application of decent methods in practice rests entirely with the individual practising architect, who, armed with these traditional principles and possessing a broad and comprehensive vision, not to speak of a healthy and sincere desire to apply in addition to all this the golden rule to all of his dealings, must look unselfishly at the part he must play as a unit force in the great work of his present in order that his architectural progeny may occupy that undisputed place in the affairs of the world

(*Continued on page 316.*)

List of Competitions, Contracts, etc.

For some **Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this number:** Competitions, —; Contracts, iv. vi. viii. x.; Public Appointments, xvii.; Auction Sales, xxii. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

SEPTEMBER 14.—**Doncaster.**—SWIMMING BATH, ETC., FOR YORKSHIRE INSTITUTION FOR THE DEAF.—Premiums, 50*l.* Information from Mr. B. D. Crouch, 6, Hall-gate, Doncaster.

SEPTEMBER 30.—**Dublin.**—UNIVERSITY COLLEGE: NEW BUILDINGS.—**Limited to architects in Ireland. Assessor, Mr. H. T. Hare, F.R.I.B.A.**

SEPTEMBER 30.—**Llanelly.**—SCHOOL, ETC.—**The Llanelly Education Committee invite competitive designs and estimates for school buildings and domestic subjects centre at Stebonheath-terrace. Assessor, Mr. G. E. Halliday, F.R.I.B.A. See advertisement in issue of August 2 for further particulars.**

OCTOBER 7.—**Beckenham.**—PUBLIC ELEMENTARY SCHOOL.—Mr. A. W. S. Cross, F.R.I.B.A., assessor. Selected architects only.

OCTOBER 14.—**Balham.**—SWIMMING BATH.—The Wandsworth B.C. invite designs for a Public Swimming Bath. See advertisement in issue of August 16 for further particulars.

OCTOBER 29.—**Glasgow.**—DESIGNS FOR EXTENSION OF MUNICIPAL BUILDINGS.—**The Glasgow Corporation invite architects to submit preliminary sketch designs in competition for the extension of the Municipal buildings. Five will be selected to submit complete drawings in final competition. See advertisement in issue of July 12. Dr. Burnet, assessor. Deposit, 1*l.* 1s**

OCTOBER 31.—**Huddersfield.**—TOWN PLANNING.—**The Housing and Town Planning Committee of the Huddersfield Corporation invite designs for the laying-out of certain areas within the county borough and part of an adjacent suburb. Premiums 100gs., 50gs., and 25gs. Deposit of 2*l.* 2s. See advertisement in issue of August 2 for further particulars.**

OCTOBER 31.—**Llandudno.**—LANDSCAPE GARDENING.—The Llandudno U.D.C. invite designs for laying-out land adjoining the Happy Valley, about 20 acres in extent. See advertisement in issue of September 6 for further particulars.

NOVEMBER 1.—**Ottawa.**—MONUMENT TO KING EDWARD VII.—**Sketch models in plaster to be sent to the Director of National Art Gallery, Ottawa. Particulars from the Public Works Department, Ottawa (see p. 174, August 9).**

DECEMBER 1.—**Bulgaria.**—DESIGNS FOR A ROYAL PALACE AND LAW COURTS.—Particulars from the Commercial Intelligence Branch of the Board of Trade, Basinghall-street, E.C. (see p. 173, August 9).

DECEMBER 2.—**Carlisle.**—SCHOOL BUILDINGS, ETC.—Particulars from the City Surveyor, 36, Fisher-street, Carlisle.

MARCH 1, 1913.—**Rangoon.**—MUNICIPAL BUILDINGS.—The Committee of the Municipality of Rangoon invite designs for the new Municipal Buildings. Honoraria of 300*l.*, 200*l.*, and 100*l.* respectively for first, second, and third. See advertisement in August 2 and 30 for further particulars.

NO DATE.—**Jordanhill, Glasgow.**—PROPOSED TRAINING COLLEGE.—**Limited to six firms, named in "Competition News," December 1, page 635.**

NO DATE.—**Motherwell.**—HIGH SCHOOL.—Dr. Burnet, assessor. Premiums 50*l.*, 30*l.*, and 20*l.*

Contracts.

BUILDING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

SEPTEMBER 14.—**Bishop Auckland.**—HOTEL.—For pulling down and rebuilding the Black Boy Hotel, Newgate-street, Bishop Auckland. Messrs. C. Johnston & Son, architects and surveyors, 7A, Prospect-chambers, Darlington. Deposit of 2*l.* 2s. for quantities.

SEPTEMBER 16.—**Broadclyst.**—COW-HOUSES.—Erection of new cow-houses at Clyston Mills, Broadclyst. Plans with Messrs. E. H. Harbottle & Son, architects, County-chambers, Exeter.

SEPTEMBER 16.—**Poole.**—COTTAGES.—For erection of eleven cottages in Skinner-street and Pound-street, Poole, for the Poole Housing Association. Plans and specifications with Messrs. Bacon & Curtis, 44, High-street, Poole.

SEPTEMBER 16.—**Portsmouth.**—OFFICES, ETC.—For rebuilding offices and other work at the Fratton-street Council school. Plans and specification by the Surveyor, Mr. Alfred H. Bone, Cambridge Junction, Portsmouth.

SEPTEMBER 16.—**Tredegar.**—HOUSES.—Erection of thirty-one houses for the South End Building Club, Tredegar. Plans and specification with Mr. A. F. Webb, M.S.A., architect and surveyor, Blackwood.

SEPTEMBER 16.—**Tyrone.**—CHURCH.—For building a new church at Pomeroy, Co. Tyrone. Plans and specification with Messrs. William H. Byrne & Son, architects, 20, Suffolk-street, Dublin. Quantities by Mr. A. B. Brunts, of 5, Leinster-street, Dublin. Deposit, 2*l.* 2s

SEPTEMBER 17.—**Bradford.**—COW-HOUSE.—Erection of a ten-stalled cow-house at Low Ash Farm, Thackley. Plans and specifications at the Estate Office, Esholt Hall, near Shipley.

SEPTEMBER 17.—**Durham.**—SCHOOLS, ETC.—For new Council school at Waldridge-lane; alterations and additions at Birtley G e-street and Wingate Council schools; and e ion of caretakers' houses at Horden Co ry Council school. Plans, specifications, anc general conditions of contract seen, and quan ties at—For Waldridge-lane, Birtley Georg treet, and Horden caretakers' houses, the offi e of Mr. W. Rushworth, Shire Hall, Durham; or alterations at Wingate, at the office of Mr. N. Richley, Shire Hall, Durham.

SEPTEMBER 17.—**Halifax.**—SHELTER.—For the erection of a tramway shelter at Bradshaw. Plans and specifications seen, and forms of tender from Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax. Deposit of 1*l.*

SEPTEMBER 17.—**Mexborough.**—WORKS, ETC.—For new parade-room at Mexborough Police-sta n, and new parade-room at Moorthorpe Po e-station. Plans seen, and specifications, wi quantities, from Mr. J. Vickers Edwards, C ty Architect, County Hall, Wakefield.

SEPTEMBER 18.—**Tynynant.**—HOUSES.—Erection of twenty-five or more houses at Tynynant, Llantwit Vardre, for the Tynynant Property Club. Plans and specification with Messrs. Gibson, Petty Williams, & Co., architects and surveyors, Pontypridd.

SEPTEMBER 19.—**West Hartlepool.**—STATION, ETC.—For the building of a new power station and for the foundations for cooling tower ponds at the works of the Seaton Carew Iron Company, West Hartlepool. Plans, specification, and quantities, on deposit of 1*l.* 1s., from Mr. H. F. Friederichs, M.Inst.C.E., Borough Electrical Engineer, Corporation Electricity Works, Burn-road, West Hartlepool.

SEPTEMBER 20.—**Ardglass.**—STORE.—Erection of a grain and potato store at Ardglass, Co. Down. Plan and specification with Mr. R. McCullen, C.E., Minerstown, Clough, Co. Down.

SEPTEMBER 20.—**Rhondda.**—ALTERATIONS, ETC.—For extensions and alterations at the Blaenllechau infants' Council school; alterations at the boys' and girls' departments of the Cwmclydach Council school; repairing and laying cement concrete at the Dinas boys' school playground; repairing and asphalting playgrounds at the boys' and girls' departments of the Williamstown Council school. Plans and specifications seen, and quantities and tender forms from the architect, Mr. Jacob Rees, Hillside Cottage, Pentre. Deposit of 1*l.* 1s. for first two and 10s. 6d. for second two.

* SEPTEMBER 23.—**Winchmore Hill.**—RESIDENCE AND COTTAGES.—The Enfield and Edmonton Joint Hospital Board invite tenders for residence for Medical Superintendent and four workmen's cottages. See advertisement in this issue for further particulars.

* SEPTEMBER 24.—**Hendon, etc.**—WORKS AND REPAIRS.—The Commissioners of H.M. Works and Public Buildings invite tenders for ordinary works and repairs to buildings in the Hendon, Cricklewood, and Mill Hill districts during three years from October 1, 1912. See advertisement in this issue for further particulars.

SEPTEMBER 24.—**Spalding.**—COTTAGES.—Erection of thirty-six cottages on a site adjoining the Holbeach-road, Spalding. Plans and specifications by Mr. J. B. Corby, F.S.I., architect and surveyor, Stamford and Spalding. Quantities on deposit of 1*l.* 1s.

SEPTEMBER 25.—**Brislington.**—SCHOOL.—For the erection of a new infants' Council school at Brislington. Plans and specification with the architect, Mr. A. J. Pictor, A.R.I.B.A., Bruton.

* SEPTEMBER 30.—**Huddersfield.**—POST-OFFICE.—The Commissioners of H.M. Works and Public Buildings invite tenders for erection of new post-office. See advertisement in this issue for further particulars.

* SEPTEMBER 30.—**London.**—ADDITIONAL ACCOMMODATION.—The Secretary of State for War invites tenders for additional accommodation for officers and men in existing barrack blocks, also new sanitary annexes to same, site work, drainage water, gas mains, etc., at Wellington Barracks. See advertisement in this issue for further particulars.

* SEPTEMBER 30.—**Plymouth.**—RECONSTRUCTION.—The Secretary of State for War invites tenders for reconstruction of chaplain's range block as twenty "A" married soldiers' quarters (in flats) at Plymouth Citadel. See advertisement in this issue for further particulars.

OCTOBER 1.—**London.**—SCHOOL, ETC.—For the erection of a school and cottage and other works at East Lodge-lane, Botany Bay, Enfield. Drawings and specifications seen, quantities by Messrs. Young & Brown, of 104, High Holborn, London, and information from Mr. Richard Collins, Public Offices, Enfield. Deposit of 2*l.* 2s.

* OCTOBER 1.—**Tooting.**—TRAINING COLLEGE, ETC.—The London C.C. invite tenders for training college and one hostel, and also adapting an existing house for a hostel on the Furzedown Estate. See advertisement in this issue for further particulars.

OCTOBER 2.—**Redcar.**—ROOM.—Erection of a cookery and manual instruction room at West Dyke Council school, Redcar. Plans, specification, and forms of tender from Mr. Mennell, Cleveland District Education Office, Redcar.

* OCTOBER 2.—**Southend-on-Sea.**—PUMPING STATION, ETC.—The Corporation of Southend-on-Sea invite tenders for pumping station and destructor buildings, inclined roadway, two cottages, etc., at Sewage Disposal Works, Prittlewell. See advertisement in this issue for further particulars.

OCTOBER 11.—**Cold Norton.**—SCHOOL.—Erection of a new public elementary school at Cold Norton. Plans, specification, and form of contract with the County Architect, 73, Duke-street, Chelmsford. Quantities on deposit of 2*l.* 2s.

NO DATE.—**Barkisland.**—HOUSE.—For erection of scullery house. Mr. Tom Hutton, Surveyor, Barkisland.

NO DATE.—**Leeds.**—ADDITIONS, ETC.—For alterations and additions to the imbecile wards at the Union Infirmary, Beckett-street, Leeds. Plans and specifications and quantities from the architect, Mr. J. Mitchell Bottomley, 2, Basinghall-square, Leeds.

NO DATE.—**Merthyr.**—ALTERATIONS.—For extensive alterations to the Volunteers Inn, High-street, Merthyr, for Messrs. D. Williams & Co., Taff Vale Brewery. Plans, specifications, etc., with Mr. C. M. Davies, M.S.A., 112, High-street, Merthyr.

NO DATE.—**Mountain Ash.**—RESIDENCES.—For erecting two detached residences at Mountain Ash. Plans and specification from Messrs. Morgan & Elford, architects, 1, Jeffrey-street, Mountain Ash.

NO DATE.—**Neath.**—REMODELLING.—For the remodelling of Alderman Davies' Schools, Neath. Mr. J. Cook Rees, M.S.A., architect, Neath.

NO DATE.—**Neath.**—PREMISES.—For converting buildings at Melincrythan, Neath, into business premises for the Briton Ferry Co-operative Society. Plans and specification seen, and quantities, on deposit of 1*l.* 1s., from Mr. H. Alex. Clarke, architect, Briton Ferry.

NO DATE.—**West Harton.**—EXTENSIONS.—For extending the nurses' home and the infirmary kitchen, at the Workhouse, West Harton. Drawings and specification by architect, Mr. J. H. Morton, F.R.I.B.A., North-Eastern Bank-chambers, South Shields, and Newcastle-upon-Tyne. Quantities on deposit of 2*l.* 2s.

ENGINEERING, IRON, AND STEEL.

SEPTEMBER 16.—**Northfleet.**—HEATING.—For alterations to the heating apparatus at the police-station. Specification at the police-station. Mr. Frederick W. Ruck, County Architect, 86, Week-street, Maidstone.

SEPTEMBER 17.—**Erpingham.**—BRIDGES, ETC.—For the erection of bridges and culverts. Plans and specifications seen, and quantities from Messrs. A. F. Scott & Son, 24, Castle-meadow, Norwich, and 12, Holborn Hall, London, W.C.

FURNITURE, PAINTING, MATERIALS, etc.

SEPTEMBER 16.—**Chelmsford.**—PAINTING.—For exterior painting at the Admiral's Park Water Tower, Rainsford-road. Forms of tender, particulars, and specification at the Borough Engineer's Office, 16, London-road.

SEPTEMBER 19.—**London.**—PAINTING.—For interior and exterior painting at offices, St. John's-road, Upper Holloway. Specification and form of tender from the architect, Mr. E. J. Harrison, 9, Gray's Inn-square, W.C. Deposit of 2*l.*

SEPTEMBER 19.—**London.**—PAINTING, ETC.—For interior painting and painting at school in Hornsey-road, N. Specification and form of tender with the architect, Mr. E. J. Harrison, 9, Gray's Inn-square, W.C. Deposit of 2*l.*

FURNITURE, etc.—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

* OCTOBER 2.—**Canning Town.**—CLEARANCE OF SITE.—The Committee of the Mansfield House Women's Settlement invite tenders for clearance of site and purchase of galvanised-iron buildings. See advertisement in this issue for further particulars.

ROADS, SANITARY AND WATER WORKS.

SEPTEMBER 17. — **Bushey.** — STREET.—For the making-up of Grange-road (part 2) and Nightingale-road. Plans, specifications, etc., seen at the Council Offices on application to Mr. Ernest E. Ryder, Surveyor to the Council. Quantities and form of tender on deposit of 2*l.* 2s.

SEPTEMBER 18.—**Reigate.**—STREET.—For private street works in Russell's-crescent, Horley. Plan and specification at the office of the Surveyor, Mr. Arthur J. Head, 48, High-street, Reigate.

SEPTEMBER 18. — **Rochdale.** — STREETS. — For sewering, levelling, paving, metalling, flagging, channelling, and making good in New-street, Shawclough. Plans and specifications seen, and quantities and form of tender, at the Borough Surveyor's Office.

SEPTEMBER 20.—**Argoed.**—SEWAGE.—For diversion of sewer near Castle Inn, Argoed. Drawings and specification seen, and quantities and form of tender from Mr. Dan H. Price, Surveyor to the Council, Surveyor's Office, Aberbargoed, Mon.

SEPTEMBER 21.—**Burnley.**—IMPROVEMENT.—For a road improvement at Higham. Particulars and form of tender from Mr H. Pritchard, M.I.M. and C.E., Surveyor, Union Offices, Burnley.

SEPTEMBER 25. — **Belfast.**—SETTS.—The Belfast Harbour Commissioners invite tenders for the supply of about 400 tons of setts. Specification, form of tender, and information from the Harbour Engineer, Mr. W. Redfern Kelly, M.Inst.C.E.

* SEPTEMBER 25. — **Hammersmith.**—PAVING.—The Hammersmith B.C. invite tenders for paving east footpath of Wood-lane, between Shinfield-street and North Pole-road. See advertisement in this issue for further particulars.

NO DATE.—**Blackwell.**—SEWERS.—For the construction of 9-in. sewers in the parish of South Normanton. Particulars from Mr. H. Silcock, District Surveyor, 67, Westgate, Mansfield.

NO DATE.—**Bury.**—SEWAGE.—For constructing about 440 lin. yds. of 12-in. diameter stoneware sewer. Engineer, Mr. E. T. Morland Johnson, Bank of England-chambers, Tib-lane, Cross-street, Manchester.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*QUANTITY SURVEYOR	Lancaster County Asylum ...	See advertisement in this issue	Sept. 21
*CLERK OF WORKS	Deptford Borough Council ...	3*l.* 10s. per week	Sept. 23
*CITY ARCHITECT AND SURVEYOR	Calcutta Corporation	See advertisement in this issue	Sept. 28
*CHIEF ARCHITECT'S ASSISTANT	Glamorgan C.C.	200*l.* per annum	No date.

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*BUILDING SITES, PARKSTONE, DORSET—Canford Cliffs Hotel	Whatley King & Bamford	Sept. 20
*BUILDER'S STOCK AND PLANT, CHORLEY WOOD—On the Works	J. T. Skelding & Holland	Sept. 26
*BUILDING SITES, COTTAGE, ETC., SURREY—At the Mart	Driver, Jonas, & Co.	Oct. 22

INFLUENCE AND ETHICS OF COMPETITIONS—
continued from page 314.

that should rightly be given to those who (we at least believe) represent the greatest of all constructive professions.

The American architect of the future must of necessity become less of a creative artist, and more of a trained manager of building enterprise. The ever-increasing pressure for speedy and adequate execution will preclude more and more exhaustive study and tentative experimentation. It will become the duty of the architect to surround himself by specialists in design, in construction, in superintendence, in technical research and engineering; men representing every department of architectural practice, and possessing a knowledge in their individual capacity perhaps far beyond his own. The architect himself must remain, however, the master mind that organises and directs those who strive for the common cause of the work involved and for the office. He will deserve to exercise a greater moral influence in public affairs than heretofore, for the scope of his organised efforts will be nation-wide, and his authority will be that of a broadly trained executive of large and varied experience which, coupled with a high sense of duty, should make him a generous and true friend of public spirit and the eternal fitness of things.

LONDON COUNCILS.

Barnet.—A plan has been passed for Mr. T. Crude for the erection of nine houses in Normandy-avenue.

Barnet (East).—Plans have been passed for Mr. H. Catford for the erection of six houses in Leicester-road.

Battersea.—Muncaster-road and portion of Culmstock-road are to be made up, the footpaths with artificial stone and the roadways with tarred slag macadam, at estimated costs of 1,503*l.* and 929*l.* respectively.

Hackney.—The tender of the Acme Flooring and Paving Company (1904), Ltd., has been accepted by the Borough Council at 5,827*l.* 3s. 9½d. for supplying the necessary materials and the execution of the works required for the repaving of portions of the carriageways of Stamford-hill and Kingsland-road with Acme-Sectional Jarah wood paving blocks, 3 in. deep, as has also the tender of Messrs. William Griffiths & Co., Ltd., Hamilton House, Bishopsgate, E.C., at 1,507*l.* 16s. 9d. for repaving the carriageway of part of Victoria Park-road with creosoted yellow deal blocks 5 in. deep. The following plans have been passed:—Messrs. J. Garey & Sons, house and shop, Lower Clapton-road; Mrs. A. Hunter, alterations and additions to Nos. 65 and 7, Tottenham-road; Mr. H. S. Goodhart-Rendel, building, Eton Mission Club premises, Rise-holme-street; Messrs. Durbin & Katesmark, additions at German Hospital, Clifton-grove; Messrs. H. Bradford & Sons, eight houses, Wellington-road; Messrs. Moon & Ballinger, four shops, Lea Bridge-road. Mr. C. W. Hodgson, on behalf of Messrs. Brock & Son, has lodged plans with the London County Council for the erection of a factory in Chatsworth-road.

Sunbury.—Plans have been passed for Messrs. Smith & Co., Walthamstow, N.E., for the erection of six houses in Orchard-road, Park-road.

FOREIGN AND COLONIAL.

Building in Egypt.

The Egyptian *Journal Officiel* of August 17 notifies that tenders are invited by the Ministry of Public Works for (1) the construction of three pavilions for the Khanka Lunatic Asylum; and (2) the sanitary equipment for these pavilions. Sealed tenders, on stamped paper (obtainable from Mr. A. L. Webb, C.M.G., Queen Anne's-chambers, Broadway, Westminster, London, S.W.), will be received up to 11 a.m. on September 30, by the Chief of the Administrative Service, Public Works Ministry, Cairo, at whose office the specifications, plans, and estimates can be seen. Local representation is necessary.

OBITUARY.

Mr. J. Wolstenholme.

The death on September 6, at No. 11, Hillgrove-road, London, N.W., is announced of Mr. James Wolstenholme, in his 80th year, lately of Blackburn, architect and surveyor. Mr. Wolstenholme, in 1891, he being then the Borough Surveyor, made the plans and designs for the Blackpool Sanatorium, comprising two wards for forty patients, and four cottages, with administrative, laundry, and disinfecting blocks, stabling, etc., erected at a cost of 9,000*l.*, and enlarged in 1905-6 by Mr. J. S Brodie, the Borough Engineer.

The Late Mr. R. C. Jones.

Among other works of Mr. Jones (see p. 287) should be mentioned the Congregational Church at Ryde and the superintendence and measuring of the excavations at the Roman Villa at Brading, discovered at the beginning of the 'eighties.

PATENTS.

APPLICATIONS PUBLISHED.*

18,765 of 1911.—Charles Henry Sparks: Gutter bracket and wedge.

25,786 of 1911.—Daniel Weisinger Adams: Survey instrument.

25,826 of 1911.—John Badger: Locks and latch for sliding doors.

26,131 of 1911.—Lionel Henry Teale: Domestic fireplaces.

29,185 of 1911.—Francis Heron Rogers (Société l'Almandares): Casings for stoves or furnaces.

29,284 of 1911.—Reginald Tavernor Johnson: Means for supporting lavatory basins.

3,351 of 1912.—Edward Richards: Stays for swing windows, fanlights, and the like.

5,648 of 1912.—Maz Franz Hoffmann: Water-closets.

5,818 of 1912.—Anthony Robson Poole: Distributing-tank for use in systems of heating by liquid circulation.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the prepaid rate of 11s. per annum, with delivery *by Friday Morning's Post* in London and its suburbs.

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Remittances (payable to J. MORGAN) should be addressed to The Publisher of "THE BUILDER," 4, Catherine-street, W.C.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

August 27.—By S. & G. KINGSTON.

Moulton, Lincs.—Farms and smallholdings, 615 acres, *f.*	£32,693

August 28.—By BLACKFORD & SON.

Kingsnympton, Devon.—Broomham and Littlewood Farms, 299 acres, *f.*	2,750

August 30.—By WINTERTON & SONS.

Shenstone, Stafford.—Moor View, *f.*, w.r. 31*l.* 4s.	180
Lichfield, Stafford.—Gallows Wharf and 2 a. 3 r. 20 p., *f.*	150
Pasture, 17 a. 3 r. 31 p., *f.*	1,325
170 to 188 (even), St. John-st., and 3 r. 2 p., *f.*, w.r. 117*l.*	1,000
Whittington, Stafford.—Rose Cottage and 2 a. 1 r. 36 p., *f.*	300

By JOSEPH STOWER.

Harlech, Merioneth.—Part of Harlech Estate, 216 a. 3 r. 30 p., *f.*	7,535

***Contractions used in these lists.*—F.g.r.** for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.	£ s. d.
Best Stocks	1 14 0
Picked Stocks for Facings	2 10 0

Per 1000, Delivered at Railway Depôt.

	£ s. d.		£ s. d.
Flettons	1 13 0	Best Blue Pressed Staffordshire	3 15 0
Best Fareham Red	3 12 0	Do. Bullnose	4 0 0
Best Red Pressed Ruabon Facing	5 0 0	Best Stourbridge Fire Bricks	4 0 0
Glazed Bricks—			
Best White, Ivory, and Salt Glzd. Str'tch'rs	12 7 6	Double Headers	14 17 6
Headers	11 17 6	One Side and two Ends	18 17 6
Quoins, Bullnose, and 4½ in. Flats	15 17 6	Two Sides and one End	19 17 6
D'ble Stretchers	17 17 6	Splays & Squints	17 7 6

Second Quality £1 10s. per 1000 less than best.

	s. d.	
Thames and Pit Sand	6 9	per yard, delivered.
Thames Ballast	5 6	»
Best Portland Cement	34 0	per ton, »
Best Ground Blue Lias Lime	19 0	» »

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 13s. 6d. per yard delivered
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly dpt.

STONE.

Per Ft. Cube.

	s. d.
Bath Stone—delivered on road waggons, Paddington Depôt	1 7½
Do. do. delivered on road waggons, Nine Elms Depôt	1 9½
Portland Stone (20 ft. average)—	
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 3
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 4½

Per Ft. Cube, delivered at Railway Depôt.

	s. d.		s. d.
Ancaster in blocks	1 10	Closeburn Red Freestone	2 0
Beer in blocks	1 6	Red Mansfield Freestone	2 4
Greenshill in blocks	1 10	Talacre & Gwespyr Stone	2 4
Darley Dale in blocks	2 4		
Red Corsehill in blocks	2 3		

York Stone—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt.	s. d.
Scappled random blocks	2 10
Per Ft. Super., Delivered at Railway Depôt.	
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3
6 in. rubbed two sides ditto, ditto	2 6
3 in. sawn two sides slabs (random sizes)	0 11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7
1½ in. to 2 in. ditto, ditto	0 6

Hard York—

Per Ft. Cube, Delivered at Railway Depôt.	
Scappled random blocks	3 0
Per Ft. Super., Delivered at Railway Depôt.	
6 in. sawn two sides landing to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto	3 0
3 in. sawn two sides slabs (random sizes)	1 2
2 in. self-faced random flags	0 5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£ s. d.	In. In.	£ s. d.
20×10 best blue Bangor	13 2	20×10 best Eur'ka unfading green	15 17 6
20×12 ditto	13 17 6	20×12 ditto	18 7 6
20×10 1st quality ditto	13 0 0	18×10 ditto	13 5 0
20×12 ditto	13 15 0	16×8 ditto	10 5 0
16×8 ditto	7 5 0	20×10 permanent green	11 12 6
22×10 best blue Portmadoc	12 12 6	18×10 ditto	9 12 6
16×8 ditto	6 12 6	16×8 ditto	6 12 6

TILES.

At Railway Depôt.

	s. d.		s. d.
Best plain red roofing (per 1000)	42 0	Best "Hartshill" brand, plain sand-faced (per 1000)	45 0
Hip and Valley (per doz.)	3 7	Do. pressed (per 1000)	42 6
Best Broseley (per 1000)	50 0	Do. Ornamental (per 1000)	47 6
Do. Ornamental (per 1000)	52 6	Hip (per doz.)	4 0
Hip and Valley (per doz.)	4 0	Valley (per doz.)	3 6
Best Ruabon red, brown, or brindled (Edw'ds) (per 1000)	57 6	Staffords. (Hanley) Reds or Brindled (per 1000)	42 6
Do. Ornamental (per 1000)	60 0	Hand-made sand-faced (per 1000)	45 0
Hip (per doz.)	4 0	Hip (per doz.)	4 0
Valley (per doz.)	3 0	Valley (per doz.)	3 6

WOOD.

Building Wood	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	14 0 0 ...	15 10 0
Deals: best 3 by 9	13 10 0 ...	14 10 0

WOOD (*Continued*).

Building Wood (*Continued*)—	At per standard. £ s. d.	£ s. d.
Battens: best 2½ in. by 7 in. and 3 in., and 3 in. by 7 in. and 8 in.	11 10 0 ...	12 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0 ...	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0 »	»
2 in. by in. and 2 in. by 6 in.	9 10 0 ...	10 10 0
2 in. by 4½ in. and 2 in. by 5 in.	9 0 0 ...	10 0 0
Foreign Sawn Boards—		
1 in. and 1½ in. by 7 in.	0 10 0	more than battens.
¼ in.	1 0 0	»
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 5 0 0 ...	5 10 0
Seconds	4 10 0 ...	5 0 0
Small timber (8 in. to 10 in.)	3 17 6 ...	4 0 0
Small timber (6 in. to 8 in.)	3 5 0 ...	3 10 0
Swedish balks	2 12 6 ...	3 0 0
Pitch-pine timber (30 ft. average)	5 5 0 ...	6 0 0

Joiners' Wood.	At per standard. £ s. d.	£ s. d.
White Sea: first yellow deals, 3 in. by 11 in.	24 10 0 ...	25 10 0
3 in. by 9 in.	22 10 0 ...	23 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0 ...	18 0 0
Second yellow deals, 3in. by 11in.	19 0 0 ...	20 0 0
» » 3 in. by 9 in.	18 0 0 ...	19 10 0
Battens, 2½ in. and 3in. by 7 in.	14 0 0 ...	15 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	14 0 0 ...	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0 ...	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 10 0 ...	22 10 0
Do. 3 in. by 9 in.	18 10 0 ...	19 10 0
Battens	14 0 0 ...	15 0 0
Second yellow deals, 3 in. by 11 in	16 10 0 ...	17 10 0
Do. 3 in. by 9 in.	15 0 0 ...	16 0 0
Battens	11 10 0 ...	12 10 0
Third yellow deals, 3in. by 11 in.	13 10 0 ...	14 10 0
Do. 3 in. by 9 in.	13 0 0 ...	14 0 0
Battens	10 10 0 ...	11 0 0
White Sea and Petersburg—		
First white deals, 3 in. by 11 fn.	15 0 0 ...	16 0 0
» » 3 in. by 9 in.	14 0 0 ...	14 10 0
Battens	11 10 0 ...	12 10 0
Second white deals, 3in. by 11in.	14 0 0 ...	15 0 0
» » 3 in. by 9 in.	13 0 0 ...	14 0 0
Battens	10 10 0 ...	11 0 0
Pitch-pine: deals	19 0 0 ...	21 0 0
Under 2 in. thick extra	0 10 0 ...	1 0 0
Yellow Pine—First, regular sizes	48 0 0	upwards.
Oddments	32 0 0	»
Seconds, regular sizes	33 0 0	»
Oddments	28 0 0	»
Kauri Pine—Planks per ft. cube	0 4 6 ...	0 6 0
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 3 0 ...	0 3 9
Small » »	0 2 6 ...	0 2 6
Wainscot Oak Logs, per ft. cube	0 6 6 ...	0 8 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 10 ...	0 1 0
¼ in. do. do.	0 0 8½ ...	—
Dry Mahogany—Houndras, Tabasco, per ft. super. as inch	0 0 10 ...	0 1 1
Selected, Figury, per ft. super. as inch	0 1 6 ...	0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10 ...	0 1 0
Teak, per load	18 0 0 ...	22 0 0
American Whitewood planks, per ft. cube	0 5 0 ...	0 6 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6 ...	0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0 ...	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0 ...	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0 ...	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6 ...	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0 ...	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0 ...	0 13 6
1 in. by 7 in. » »	0 14 0 ...	0 18 6
¾ in. by 7 in. white » »	0 10 0 ...	0 11 0
1 in. by 7 in. » »	0 12 9 ...	0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	8 10 0 ...	9 10 0
Compound Girders, ordinary sections	10 0 0 ...	11 0 0
Steel Compound Stanchions	11 10 0 ...	12 10 0
Angles, Tees, and Channels, ordinary sections	10 0 0 ...	11 0 0
Flitch Plates	10 0 0 ...	11 0 0
Cast Iron Columns & Stanchions, including ordinary patterns	8 0 0 ...	8 10 0

METALS.

Iron—	Per ton, in London. £ s. d.	£ s. d.
Common Bars	9 0 0 ...	9 10 0
Staffordshire Crown Bars, good merchant quality	9 5 0 ...	9 15 0
Staffordshire "Marked Bars"	11 0 0 ...	—
Mild Steel Bars	9 5 0 ...	9 15 0
Hoop Iron, basis price	10 0 0 ...	—
» » Galvanised	17 10 0 ...	—
("And upwards, according to size and gauge.)		
Sheet Iron Black—		
Ordinary sizes to 20 g.	10 5 0 ...	—
» » 24 g.	11 5 0 ...	—
» » 26 g.	12 15 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 10 0 ...	—
Ordinary sizes to 22 g. and 24 g.	16 0 0 ...	—
» » 26 g.	17 0 0 ...	—

METALS (*Continued*).

Iron (*Continued*)—	Per ton, in London. £ s. d.	£ s. d.
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	18 10 0 ...	—
» » 22 g. and 24 g.	19 0 0 ...	—
» » 26 g.	20 10 0 ...	—
Galvanised Corrugated Sheets—		
Ordinary sizes, 6ft. to 8ft. 20 g.	15 0 0 ...	—
» » 22 g. and 24 g.	15 5 0 ...	—
» » 26 g.	16 15 0 ...	—
Best Soft Steel Sheets, 5 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12 10 0 ...	—
Best Soft Steel Sheets, 2 g. & 24 g.	13 10 0 ...	—
» » » 26 g.	15 10 0 ...	—
Cut Nails, 3 in. to 6 in.	11 0 0 ...	11 10 0
(Under 3 in., usual trade extras.)		

LEAD, &c.

	£ s. d.	
Lead—Sheet, English, 4lb. and up	27 0 0 ...	—
Pipe in coils	27 10 0 ...	—
Soil pipe	30 10 0 ...	—
Compo pipe	30 10 0 ...	—
Zinc—Sheet—	In casks of 10 cwt.	
Vielle Montagne	33 15 0 ...	—
Silesian	33 10 0 ...	—
Zinc, in bundles, 1s. per cwt. extra.		
Copper—		
Strong Sheet per lb.	0 1 1 ...	—
Thin » »	0 1 2 ...	—
Copper nails »	0 1 0 ...	—
Copper wire »	0 1 0 ...	—
Brass—		
Strong Sheet »	0 1 0 ...	—
Thin »	0 1 1 ...	—
Tin—English Ingots »	0 2 2 ...	—
Solder—Plumbers' »	0 0 10 ...	—
Tinmen's »	0 1 1 ...	—
Blowpipe »	0 1 3 ...	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

15 oz. thirds	2d.	26 oz. fourths	3d.
» fourths	1½d.	32 oz. thirds	5½d.
21 oz. thirds	3½d.	» fourths	4½d.
» fourths	2½d.	Fluted Sheet, 15 oz.	3d.
26 oz. thirds	4½d.	» 21 oz.	4d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

⅛	Rolled plate 2½d.	Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white	3½d.
1/16	Rough rolled and rough cast plate	2½d.	
¼	Rough rolled and rough cast plate	3d.	
		Ditto, tinted	5d.

* Not less than two crates.

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 3 0
» » » in barrels	»	0 3 1
» » » in drums	»	0 3 2
Boiled » in barrels	»	0 3 2
» » » in drums	»	0 3 5
Turpentine in barrels	»	0 2 7
» in drums	»	0 2 9
Genuine Ground English White Lead, per ton		30 15 0
Red Lead, Dry	»	27 10 0
Best Linseed Oil Putty	per cwt.	0 10 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and not to the Editor.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 6 p.m. on *Wednesday*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

CARGO FLEET.—For proposed new school and alterations and additions to existing Lawson Schools at Cargo Fleet, Yorkshire, for the North Riding Education Committee. Mr. William E. Haslock, architect and surveyor, 143, Albert-road, Middlesbrough :—

Vinter & Davison	£6,250 0 0	S. Coates, Ltd.	£5,780 12 7
T. Metcalfe	6,143 15 0	T. Pearson	5,603 0 0
King & Sons	6,061 8 9	Porteous	5,564 12 0
D. Doughty & Sons	6,043 2 0	H. McNaughton, Middlesbrough*	5,424 14 0
G. Radge	5,993 17 8		

EALING.—For the erection of a new police section-house at Ealing. Mr. J. Dixon Butler, Architect, Surveyor to the Metropolitan Police, New Scotland-yard, S.W. Quantities by Messrs. Thurgood, Son, & Chidgey, 8, Adelphi-terrace, Strand, W.C. :—

E. Green & Sons	£9,492 13 3	Leslie & Co.	£5,196 0 0
W. Taylor & Sons	5,390 0 0	E. Potterton	5,195 0 0
Rice & Son	5,370 0 0	Myring Bros.	5,150 0 0
F. & H. F. Higgs	5,297 0 0	Lole & Co.	5,023 0 0
Messom & Sons	5,200 0 0	Adamson & Sons	4,987 0 0
		J. W. Dickens	4,977 0 0

LITTLEHAMPTON.—For a sea wall at Millfield, Rustington, for the Metropolitan Asylums Board. Mr. H. Howard, F.S.I., surveyor :—

E. Wall	£850 0	E. H. King	£400 0
K. Randall	679 15	A. Burrell & Standen	396 0
T. Bennett (Herts Contract Co.)	620 0	Summers Bros.	375 15
A. G. Osenton	571 0	J. Linfield & Sons, Ltd.	375 0
T. Robinson	546 19	Snewin Bros., High-street, Littlehampton*‡	374 0
D. G. Somerville & Co., Ltd.	520 0 / 345 0‡		
E. Hill	495 2		

‡ Alternative tender for reinforced concrete wall to their own system and design.

LLANHILLETH.—For erection of a drill hall, for the 2nd Battalion Monmouthshire Regiment. Messrs. Jenkins, James, & Co., architects, Newbridge, Mon. Quantities by architects :—

D. Lewis, Aberbeeg, Mon* £1,380 18 7

MIDDLESBROUGH.—For all trades except carpenter, joiner, ironmonger, and painter, proposed machine bakery at Middlesbrough, Yorkshire, for the Middlesbrough Co-operative Society, Ltd. Mr. William E. Haslock, architect and surveyor, Middlesbrough :—

H. McNaughton	£1,597 0	M. France, Red-car*	£1,303 8
T. Pearson	1,456 7		

[Carpenter, joiner, ironmonger, and painter to be executed by the society's own workmen.]

MIDSOMER NORTON (Somerset).—For the erection of an additional classroom at the Church of England schools, Midsomer Norton, for the Trustees of Ann Harris' Charity. Mr. W. F. Bird, architect, Midsomer Norton :—

F. Crouchen, Midsomer Norton* £310
[Seven tenders received.]

MIDSOMER NORTON (Somerset). — For the provision and fixing of three shop-fronts, etc., to business premises, Midsomer Norton, for the Radstock Co-operative and Industrial Society, Ltd. Mr. W. F. Bird, architect, Midsomer Norton :—

Parnall & Sons, Bristol* £406 10
[Two tenders received.]

MIDSOMER NORTON (Somerset). — For the provision and fixing of internal shopfittings to business premises, Midsomer Norton, for the Radstock Co-operative and Industrial Society, Ltd. Mr. W. F. Bird, architect, Midsomer Norton :—

S. Smith, Midsomer Norton* £295 16
[Five tenders received.]

NORMANTON.—For proposed house, Normanton, for Mr. Horne. Mr. Fred Scatchard, architect and surveyor, Midland Bank-chambers, Castleford. Quantities by architect :—

Excavator, Bricklayer, Mason, and Plasterer: J. H. Thorpe, Normanton £232 0
Carpenter and Joiner: G. Parker, Castleford 93 0
Slaters: Dalton & Sons, Castleford 25 0
Plumber and Glazier: Bateson & Sons, Castleford 55 10

PEASEDOWN ST. JOHN (Somerset).—For erection of a block of three cottages at Peasedown St. John, for Mr. J. C. Mullins. Mr. W. F. Bird, architect, Midsomer Norton :—

W. J. Heal, High Littleton* £575
[Three tenders received.]

PONTYPRIDD.—For erection of new offices in Courthorne-street. Messrs. Evans, Williams, & Evans, architects, Pontypridd :—

H. Herbert & Co.	£10,290 0 0	E. R. Evans & Bros.	£9,295 0 0
S. Shail	9,692 0 0	T. F. Howells	9,286 15 0
D. Griffiths & Son	9,536 12 5	R. Jones	9,173 2 5
W. H. Evans	9,480 0 0	J. Allen, Ltd.	8,959 5 6
D. Davies & Sons	9,353 0 0	E. Turner & Sons	8,888 0 0
Williams & James	9,302 0 0	Jones Bros.	8,558 11 6
		Knox & Wells, Cardiff*	8,387 0 0

RADSTOCK (Somerset).—For a hot-water low-pressure heating installation at the Council schools, Radstock, Somerset, for the Somerset County Education Committee. Mr. W. F. Bird, architect, Midsomer, Norton :—

G. N. Haden & Son* £206
[Seven tenders received.]

RADSTOCK (Somerset).—For the construction of a heating chamber, repairs to floors, etc., at the Council schools, Radstock, Somerset, for the Somerset County Education Committee. Mr. W. F. Bird, architect, Midsomer Norton :—

T. Foster, Radstock* £189
[Three tenders received.]

RADSTOCK (Somerset).—For the enlargement of boys' cloakroom, etc., at the Church of England school, Radstock, Somerset, for the trustees. Mr. W. F. Bird, architect, Midsomer Norton :—

T. Foster, Radstock* £130
[Three tenders received.]

WHITWOOD. — For proposed extensions to the Whitwood Mere National Schools, for the Managers. Mr. Fred Scatchard, architect and surveyor, Midland Bank-chambers, Castleford. Quantities by architect :—

Irwin & Co., Ltd., Leeds* £1,955
[Exclusive of painting.]

SOUTHAMPTON.—For rebuilding Nos. 7, 8, and 9, and the reinstatement of No. 11, Bridge-street, Southampton, for Messrs. E. Hart & Co. Mr. William Burrough Hill, F.S.I., architect and surveyor, 93, Above Bar, Southampton :—

W. A. Fussell	£1,809 13 8	A. Wright & Sons	£2,565 0 0
Playfair & Toole	2,730 0 0	H. Stevens & Co.	2,435 0 0
Dyer & Sons	2,710 0 0	A. J. Colborne	2,359 0 0
H. Cawte	2,700 0 0	W. Jupe, Cobbett-road, Bitterne Park, Southampton‡	2,353 0 0
F. Kimber	2,598 0 0		
A. Doggrell & Son	2,588 0 0		
F. Osman & Co.	2,585 0 0		
Jenkins & Sons, Ltd.	2,578 0 0		

‡ Recommended for acceptance.

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